
GROUP 22

**MANUAL
TRANSAXLE**

CONTENTS

MANUAL TRANSAXLE 22A

MANUAL TRANSAXLE OVERHAUL 22B

NOTES

GROUP 22A

MANUAL

TRANSAXLE

CONTENTS

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WARNINGS REGARDING SERVICING OF SUPPLEMENTAL RESTRAINT SYSTEM (SRS) EQUIPPED VEHICLES

WARNING

- *Improper service or maintenance of any component of the SRS, or any SRS-related component, can lead to personal injury or death to service personnel (from inadvertent firing of the air bag) or to the driver and passenger (from rendering the SRS inoperative).*
- *Service or maintenance of any SRS component or SRS-related component must be performed only at an authorized MITSUBISHI dealer.*
- *MITSUBISHI dealer personnel must thoroughly review this manual, and especially its GROUP 52B - Supplemental Restraint System (SRS) before beginning any service or maintenance of any component of the SRS or any SRS-related component.*

NOTE

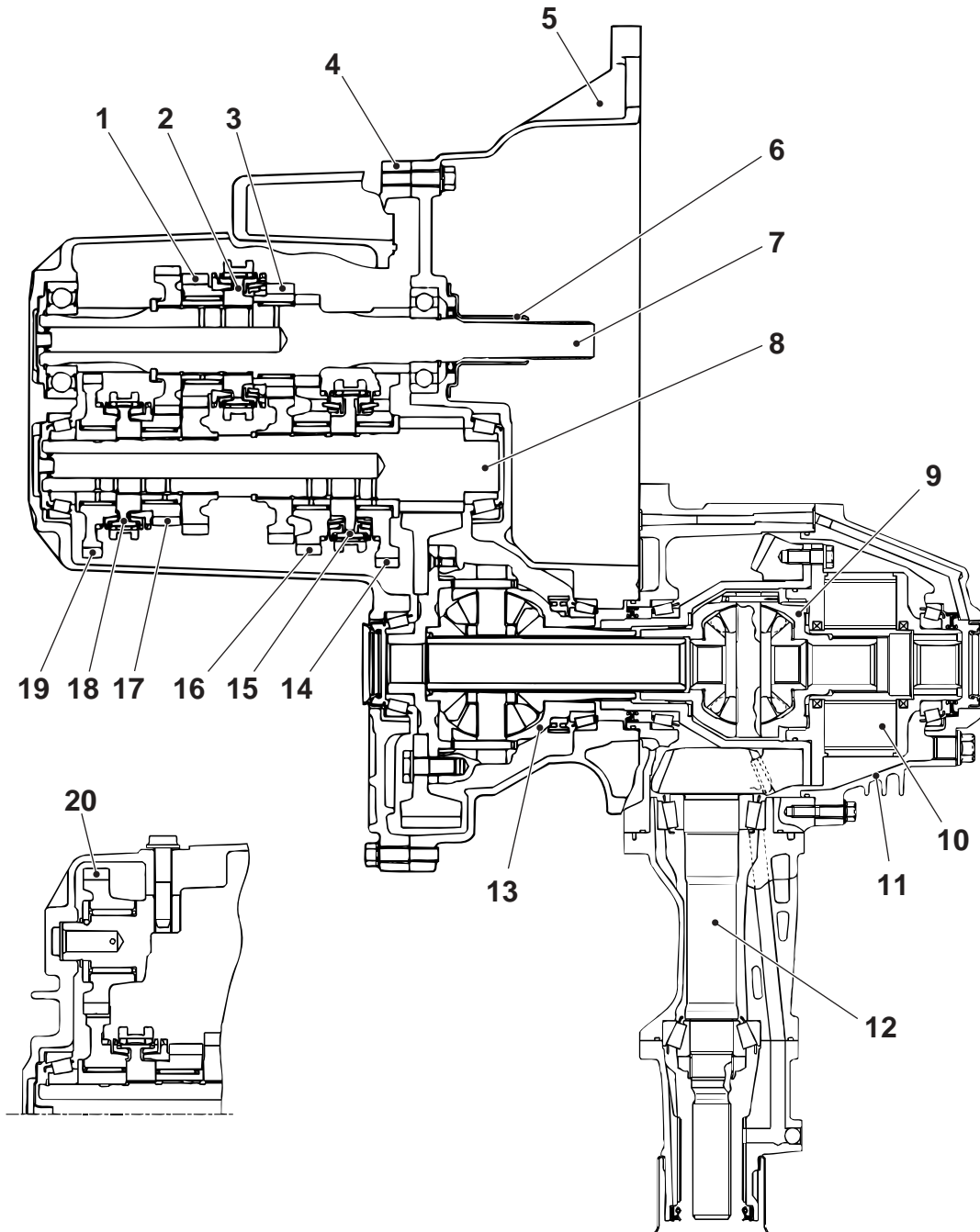
The SRS includes the following components: SRS air bag control unit, SRS warning light, front impact sensors, air bag module, clock spring, and interconnecting wiring. Other SRS-related components (that may have to be removed/installed in connection with SRS service or maintenance) are indicated in the table of contents by an asterisk (*).

GENERAL DESCRIPTION

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ITEMS		SPECIFICATIONS
Transaxle model		W5M51
Engine model		4G63-DOHC-Charge Air Cooler Turbo
Transaxle type		5-speed forward, 1-speed reverse constant mesh
Transaxle gear ratio	1st	2.928
	2nd	1.950
	3rd	1.407
	4th	1.031
	5th	0.720
	Reverse	3.416
Final reduction ratio (Differential gear ratio)		4.529
Speedometer gear ratio		31/36

SECTIONAL VIEW



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- | | | | |
|-----|-------------------------------------|-----|---|
| 1. | 4TH SPEED GEAR | 11. | TRANSFER CASE |
| 2. | 3RD – 4TH SPEED
SYNCHRONIZER HUB | 12. | HYPOID PINION |
| 3. | 3RD SPEED GEAR | 13. | CENTER DIFFERENTIAL |
| 4. | TRANSAXLE CASE | 14. | 1ST SPEED GEAR |
| 5. | CLUTCH HOUSING | 15. | 1ST – 2ND SPEED
SYNCHRONIZER HUB |
| 6. | CLUTCH RELEASE BEARING
RETAINER | 16. | 2ND SPEED GEAR |
| 7. | INPUT SHAFT | 17. | 5TH SPEED GEAR |
| 8. | OUTPUT SHAFT | 18. | 5TH – REVERSE SPEED
SYNCHRONIZER HUB |
| 9. | FRONT DIFFERENTIAL | 19. | REVERSE SPEED GEAR |
| 10. | VISCOUS COUPLING UNIT (VCU) | 20. | REVERSE IDLER GEAR |

MANUAL TRANSAXLE DIAGNOSIS

INTRODUCTION

The manual transaxle can exhibit any of the following symptoms: noise or vibration is generated, oil leaks, shifting gears is hard or troublesome, or the transaxle jumps out of gear.

The causes of these symptoms could come from: incorrect mounting, the oil level may be low, or a component of the transaxle may be faulty.

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TROUBLESHOOTING STRATEGY

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find a manual transaxle fault.

1. Gather information from the customer.

2. Verify that the condition described by the customer exists.
3. Find the malfunction by following the Symptom Chart.
4. Verify malfunction is eliminated.

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SYMPTOM CHART

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SYMPTOMS	INSPECTION PROCEDURE	REFERENCE PAGE
Noise, vibration	1	P.22A-4
Oil leaks	2	P.22A-5
Hard shifting	3	P.22A-6
Jumps out of gear	4	P.22A-7

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Noise, Vibration

DIAGNOSIS

STEP 1. Check the idle speed.

Q: Does the idle speed meet the standard values?

YES : Go to Step 2.

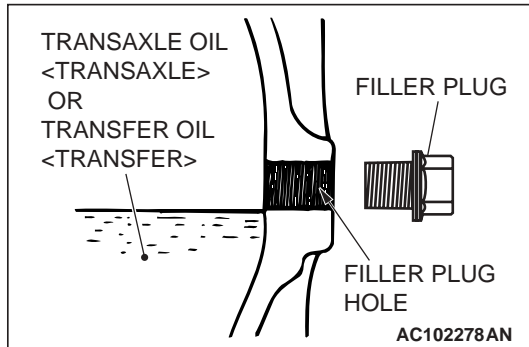
NO : Refer to GROUP 11A [P.11A-13](#), On-vehicle Service – Curb Idle Speed Check.

STEP 2. Check whether the transaxle and transfer assembly and engine mount is loose or damaged.

Q: Are the transaxle and transfer assembly and engine mount loose or damaged?

YES : Tighten or replace the part. Then go to Step 7.

NO : Go to Step 3.



STEP 3. Check that the oil level is up to the lower edge of the filler plug hole.

Q: Is the oil level up to the lower edge of the filler plug hole?

YES : Go to Step 4.

NO :

- Refill gear oil API classification GL-4 SAE 75W-85W or 75W-90. <Transaxle oil>
- Refill hypoid gear oil API classification GL-5 SAE90. <Transfer oil>
- Then go to Step 7.

STEP 4. Check for the specified oil.

Q: Is the specified oil gear oil GL-4 SAE 75W-85W or 75W-90 <Transaxle oil> and the hypoid gear oil API classification GL-5 SAE90 <Transfer oil>?

YES : Go to Step 5.

NO : If in doubt, replace the oil. Refer to [P.22A-9](#). Then go to Step 7.

STEP 5. Remove the transaxle and transfer assembly. Check the end play of the input and output shafts.

Q: Does the end play of the input and output shafts meet the standard value?

YES : Go to Step 6.

NO : Adjust the end play of the input and output shafts. Then go to Step 7.

STEP 6. Disassemble the transaxle and transfer assembly. Check the gears for wear and damage.

Q: Are the gears worn or damaged?

YES : Replace the gears. Go to Step 7.

NO : Go to Step 7.

STEP 7. Retest the systems.

Q: Is the noise or vibration still there?

YES : Return to Step 1.

NO : The procedure is complete.

INSPECTION PROCEDURE 2: Oil Leaks

DIAGNOSIS

STEP 1. Visual check.

Raise the vehicle, and check for oil leaks. If oil leak is difficult to locate, steam clean the transaxle and transfer assembly and drive the vehicle for at 10 min-

utes. Then check the leak again.

Q: Is the oil leak(s) found?

YES : Go to Step 2.

NO : Check for the oil leak(s) around the engine. Then go to Step 4.

STEP 2. Visual check at the clutch housing.

Q: Do oil leaks appear around the joint between the engine and the clutch housing?

YES : Remove the transaxle and transfer assembly. Check the input shaft oil seal, and replace if necessary. Then go to Step 4.

NO : Go to Step 3.

STEP 3. Check the oil seal or O-ring for damage.

Q: Is the oil seal or O-ring damaged?

YES : Replace the oil seal or the O-ring. Then go to Step 4.

NO : Go to Step 4.

STEP 4. Retest the system.

Q: Is the oil still leaking?

YES : Return to Step 1.

NO : The procedure is complete.

INSPECTION PROCEDURE 3: Hard Shifting

DIAGNOSIS**STEP 1. Check the transaxle control**

Q: Are the shift cable and the select cable in good condition?

YES : Go to Step 2.

NO : Repair or replace the shift cable and the select cable. Refer to [P.22A-9](#). Then go to Step 7.

STEP 2. Check the transaxle oil.

Q: Is the oil dirty?

YES : Replace the transaxle oil. Refer to [P.22A-9](#). Then go to Step 7.

NO : Go to Step 3.

STEP 3. Check the clutch system.

Q: Is the clutch system normal?

YES : Go to Step 4.

NO : Repair or replace the clutch system. Refer to [P.22A-9](#). Then go to Step 7.

STEP 4. Remove and disassemble the transaxle. Check the control housing.

Q: Is the control housing in good condition?

YES : Go to Step 5.

NO : Repair or replace the control housing. Refer to GROUP 22B, Transaxle [P.22A-9](#). Then go to Step 7.

STEP 5. Check for poor meshing of worn synchronizer ring and gear cone.

Q: Is poor meshing or worn synchronizer ring and gear cone found?

YES : Repair or replace the synchronizer ring and gear cone. Then go to Step 7.

NO : Go to Step 6.

STEP 6. Check the synchronizer spring for weakness.

Q: Is the synchronizer spring weak?

YES : Replace the synchronizer spring. Then go to Step 7.

NO : Go to Step 7.

STEP 7. Retest the system.

Q: Is the shifting of the gears still hard?

YES : Return to Step 1.

NO : The procedure is complete.

INSPECTION PROCEDURE 4: Jumps Out of Gear

DIAGNOSIS

STEP 1. Check the transaxle control

Q: Are the shift cable and the select cable in good condition?

YES : Go to Step 2.

NO : Repair or replace the shift cable and the select cable. Refer to [P.22A-9](#). Then go to Step 6.

STEP 2. Remove and disassemble the transaxle. Check the poppet spring for breakage.

Q: Is the poppet spring broken?

YES : Replace the poppet spring. Refer to GROUP 22B, Transaxle [P.22A-9](#). Then go to Step 6.

NO : Go to Step 3.

STEP 3. Check the control housing.

Q: Is the control housing in good condition?

YES : Go to Step 4.

NO : Repair or replace the control housing. Refer to GROUP 22B, Transaxle [P.22A-9](#). Then go to Step 6.

STEP 4. Check the gear shift forks for wear.

Q: Is the gear shift forks worn?

YES : Replace the gear shift fork. Refer to GROUP 22B, Transaxle [P.22A-9](#). Then go to Step 6.

NO : Go to Step 5.

STEP 5. Check the clearance.

Q: Is the clearance between the synchronizer hub and sleeve excessive?

YES : Replace the synchronizer hub or sleeve. Refer to GROUP 22B, Input Shaft [P.22A-9](#), Output Shaft [P.22A-9](#). Then go to Step 6.

NO : Go to Step 6.

STEP 6. Retest the system.

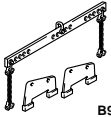
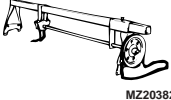
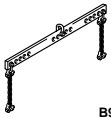
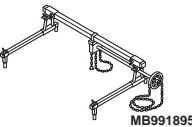
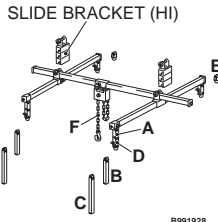

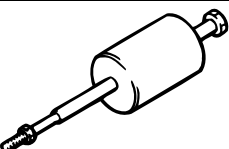
Q: Does the transaxle still jump out of gear?

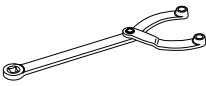
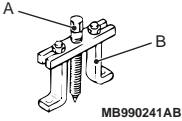

YES : Return to Step 1.

NO : The procedure is complete.

SPECIAL TOOLS

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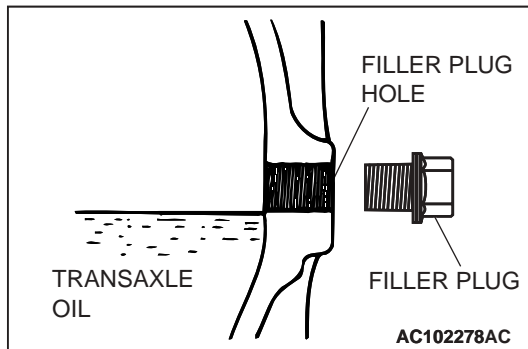
TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
 B991453	MB991453 Engine hanger assembly	MZ203827-01	When the engine hanger is used: Supporting the engine assembly during removal and installation of the transaxle assembly
 MZ203827	GENERAL SERVICE TOOL MZ203827 Engine lifter	MZ203827-01	<i>NOTE: Special tool MB991454 is a part of engine hanger attachment set MB991453.</i>
 B991454	MB991454 Engine hanger balancer	MZ203827-01	
 MB991895	MB991895 Engine hanger	—	
 B991928	MB991928 Engine hanger A: MB991929 Joint (50) ×2 B: MB991930 Joint (90) ×2 C: MB991931 Joint (140) ×2 D: MB991932 Foot (standard) ×4 E: MB991933 Foot (short) ×2 F: MB991934 Chain and hook assembly	—	
 AC106827	MB991897 Ball joint remover	MB991113-01, MB990635-01 or general service tool	Knuckle and tie rod end ball joint breakaway torque check <i>NOTE: Steering linkage puller(MB990635 or MB991113)is also used to disconnect knuckle and tie rod end ball joint.</i>
	MB991721 Slide hammer	—	Removal of the output shaft

TOOL	TOOL NUMBER AND NAME	SUPERSESION	APPLICATION
 B990767	MB990767 End yoke holder	MB990767-01	Fixing of the hub
 MB990241AB	MB990241 Axle shaft puller A: MB990242 Puller shaft B: MB990244 Puller bar	MB990241-01 or General service tool	Removal of the drive shaft
 MB991354	MB991354 Puller body	General service tool	

ON-VEHICLE SERVICE

TRANSAXLE OIL LEVEL CHECK

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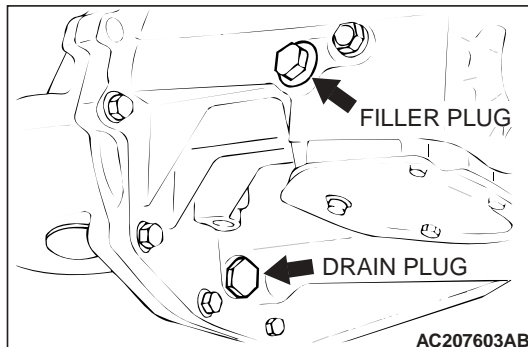


1. Remove the filler plug.
2. Check that the oil level is up to the lower edge of the filler plug hole.
3. Check that the oil is not noticeably dirty.
4. Tighten the filler plug to the specified torque.

Tightening torque: 32 ± 2 N·m (23 ± 2 ft-lb)

TRANSAXLE OIL REPLACEMENT

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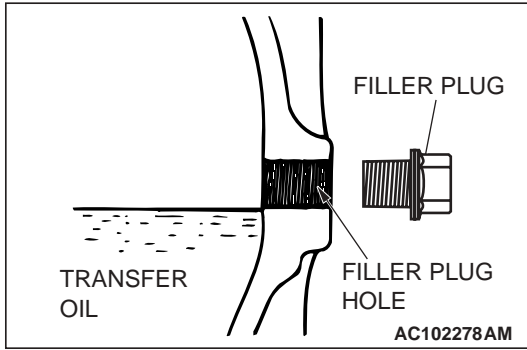


1. Remove the filler plug.
2. Remove the drain plug and drain the oil.
3. Tighten the drain plug to the specified torque.
4. Fill with gear oil API classification GL-4 SAE 75W-85W or 75W-90 until the level comes to the lower portion of filler plug hole.

Quantity: 2.8 dm³ (2.9 quart)

5. Tighten the filler plug to the specified torque.

Tightening torque: 32 ± 2 N·m (23 ± 2 ft-lb)

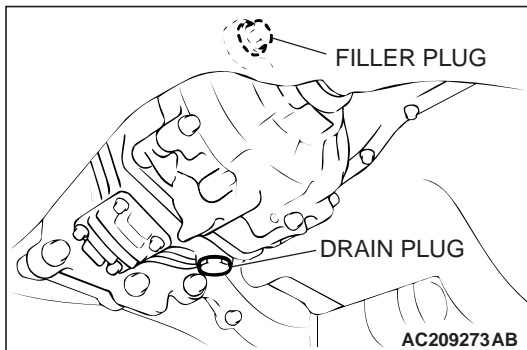


TRANSFER OIL CHECK

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1. Remove the filler plug.
2. Check that the oil level is up to the lower edge of the filler plug hole.
3. Check that the oil is not noticeably dirty.
4. Tighten the filler plug to the specified torque.

Tightening torque: 32 ± 2 N·m (23 ± 2 ft-lb)



TRANSFER OIL REPLACEMENT

M1221001200042

1. Remove the filler plug.
2. Remove the drain plug and drain the oil.
3. Tighten the drain plug to the specified torque.
4. Fill with hypoid gear oil API classification GL-5 SAE90 until the level comes to the lower portion of filler plug hole.

Quantity: 0.55 dm^3 (0.58 quart)

5. Tighten the filler plug to the specified torque.

Tightening torque: 32 ± 2 N·m (23 ± 2 ft-lb)

TRANSAXLE CONTROL

REMOVAL AND INSTALLATION

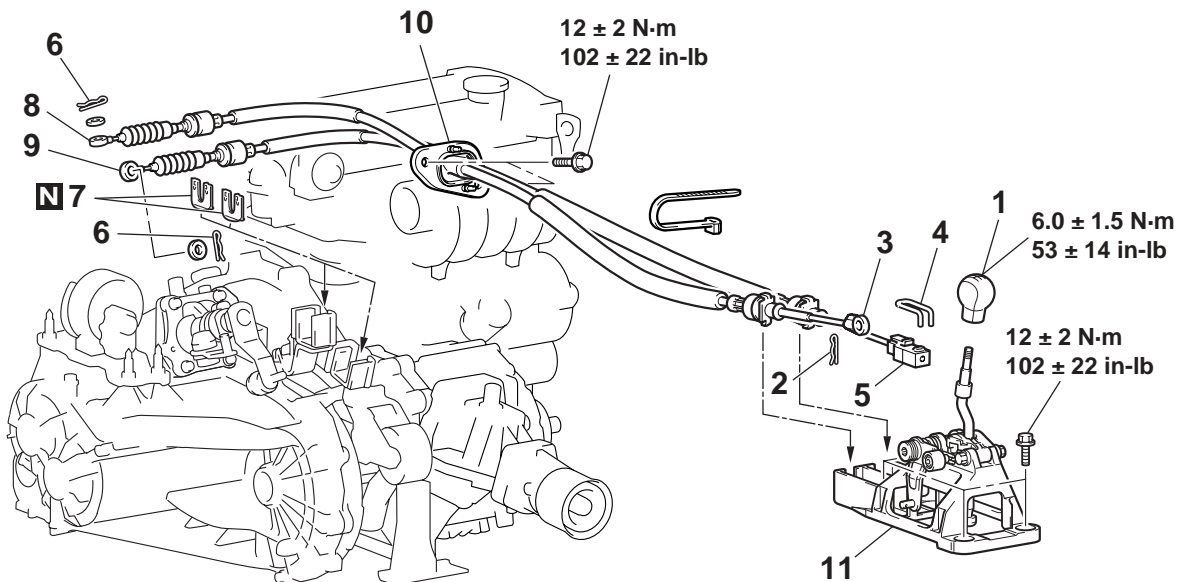
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⚠ WARNING

Be careful not to subject the SRS-ECU to any shocks during removal and installation of the shift cable and select cable assembly.

Pre-removal and Post-installation Operation

- Air Cleaner Assembly Removal and Installation (Refer to GROUP 15, Air Cleaner [P.15-7.](#))
- Air Hose E, Air Hose C, Air Hose D Removal and Installation (Refer to GROUP 15, Charge Air Cooler [P.15-8.](#))
- Battery and Battery Tray Removal and Installation.



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GEARSHIFT CABLE AND SELECT CABLE ASSEMBLY REMOVAL STEPS

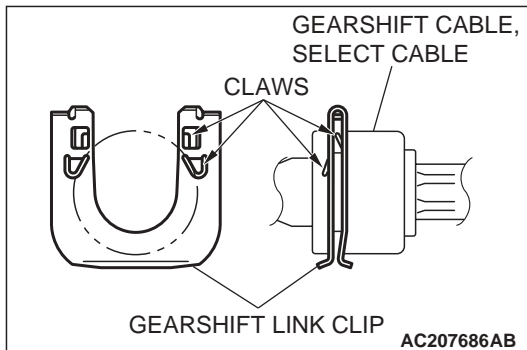
- | | | | | |
|-------|-------|---|---|-------|
| | 1. | GEARSHIFT LEVER KNOB | <<A>> | >>A<< |
| | • | FRONT FLOOR CONSOLE
(REFER TO GROUP 52A P.52A-7.) | | |
| | 2. | SNAP PIN | | |
| | 3. | SELECT CABLE CONNECTION
(GEARSHIFT LEVER SIDE) | | |
| >>B<< | 4. | GEARSHIFT CABLE CLIP | | |
| | 5. | GEARSHIFT CABLE
CONNECTION (GEARSHIFT
LEVER SIDE) | | |
| | • | SRS-ECU (REFER TO GROUP
52B P.52B-182.) | | |
| | 6. | SNAP PIN | | |
| <<A>> | >>A<< | 7. | GEARSHIFT LINK CLIP | |
| <<A>> | >>A<< | 8. | SELECT CABLE CONNECTION
(TRANSAXLE SIDE) | |

GEARSHIFT CABLE AND SELECT CABLE ASSEMBLY REMOVAL STEPS (Continued)

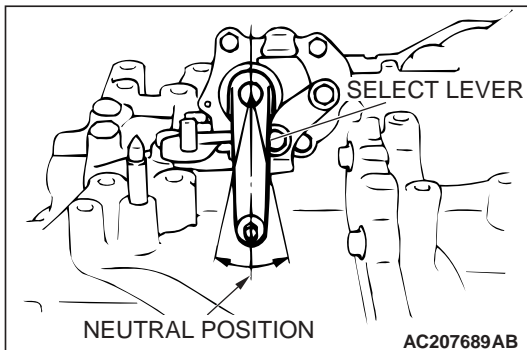
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|-------|-------|---|---|
| | 9. | GEARSHIFT CABLE
CONNECTION (TRANSAXLE
SIDE) | |
| | >>A<< | 10. | GEARSHIFT CABLE AND
SELECT CABLE ASSEMBLY
GEARSHIFT LEVER ASSEMBLY
REMOVAL STEPS |
| | 1. | GEARSHIFT LEVER KNOB | |
| | • | FRONT FLOOR CONSOLE
(REFER TO GROUP 52A P.52A-7.) | |
| | 2. | SNAP PIN | |
| | 3. | SELECT CABLE CONNECTION
(GEARSHIFT LEVER SIDE) | |
| >>B<< | 4. | GEARSHIFT CABLE CLIP | |
| | 5. | GEARSHIFT CABLE
CONNECTION (GEARSHIFT
LEVER SIDE) | |
| | 11. | GEARSHIFT LEVER ASSEMBLY | |

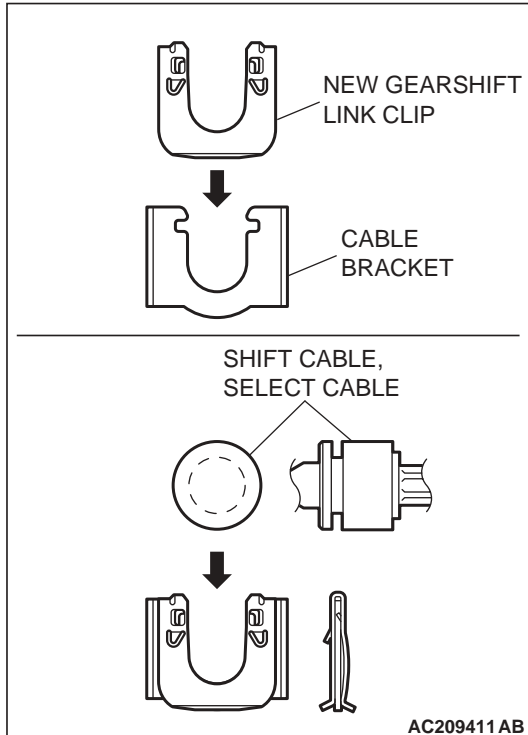
REMOVAL SERVICE POINT**<<A>> GEARSHIFT LINK CLIP/SELECT CABLE CONNECTION (TRANSAXLE SIDE)/GEAR SHIFT CABLE CONNECTION (TRANSAXLE SIDE) INSTALLATION**

Push up the claws of the gearshift link clip using a screwdriver, etc., and then remove the gearshift link clip from the bracket together with the cables.

**INSTALLATION SERVICE POINT****>>A<< GEARSHIFT CABLE AND SELECT CABLE ASSEMBLY/GEARSHIFT CABLE CONNECTION (TRANSAXLE SIDE)/SELECT CABLE CONNECTION (TRANSAXLE SIDE)/GEARSHIFT LINK CLIP**

1. Set the transaxle side shift lever and the passenger compartment side shift lever to the neutral position.
2. Install the painted part of the shift cable end (transaxle side) and painted part of the select cable (transmission side) facing the snap pin.





⚠ CAUTION

Insert thoroughly the gearshift link clip, shift cable and select cable until they click in place.

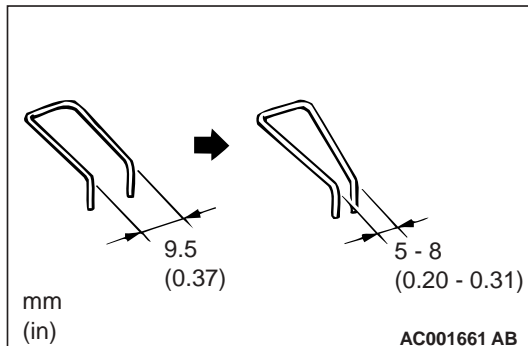
3. After installing the new gearshift link clip to the cable bracket of the transaxle, install the shift cable and select cable to the cable bracket.

NOTE: The clip is reversible.

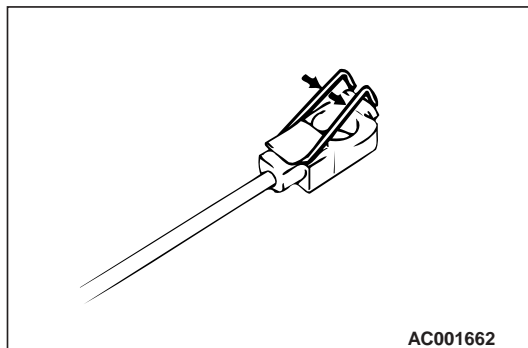
4. Move the shift lever to all positions and check that the operation is smooth.

>>B<< SHIFT CABLE CONNECTION (SHIFT LEVER SIDE) INSTALLATION

1. Make sure that there is no excessive play at the shift cable end gearshift cable clip. If there is excessive play or the gearshift cable clip is disengaged from the shift cable end, check the clip opening gap. If the gap is more than 9.5 mm (0.37 inch), squeeze the gearshift cable clip until the relaxed gap reaches 5 to 8 mm (0.20 to 0.31 inch).

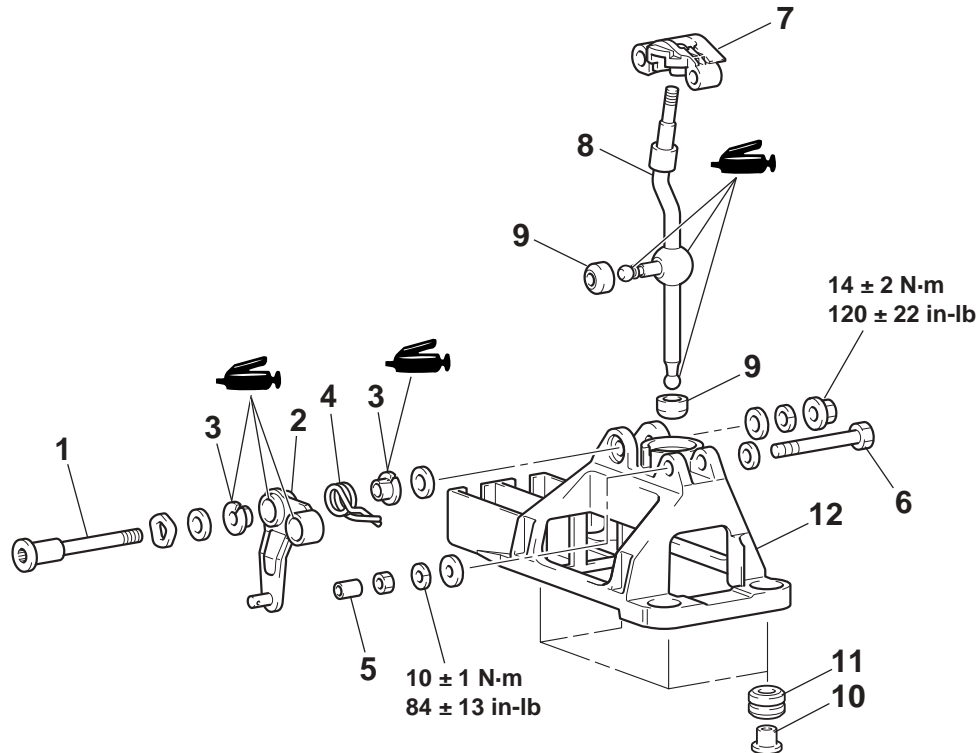


2. Engage the gearshift cable clip with the shift cable hook securely, and push the gearshift cable clip with your thumbs until it clicks in place.
3. Install the shift cable to the shift lever.



SHIFT LEVER ASSEMBLY
DISASSEMBLY AND ASSEMBLY

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DISASSEMBLY STEPS

1. GEARSHIFT LINK BOLT
2. GEARSHIFT SELECT LEVER
3. GEARSHIFT LINK BUSHING
4. GEARSHIFT LEVER SPRING
5. GEARSHIFT LINK COLLAR
6. BOLT
7. GEARSHIFT LEVER RETAINER

DISASSEMBLY STEPS

8. GEARSHIFT LEVER
9. GEARSHIFT LINK BUSHING
10. GEARSHIFT LEVER BRACKET
DISTANCE PIECE
11. GEARSHIFT LINK BUSHING
12. GEARSHIFT LEVER BRACKET

TRANSFER ASSEMBLY

REMOVAL AND INSTALLATION

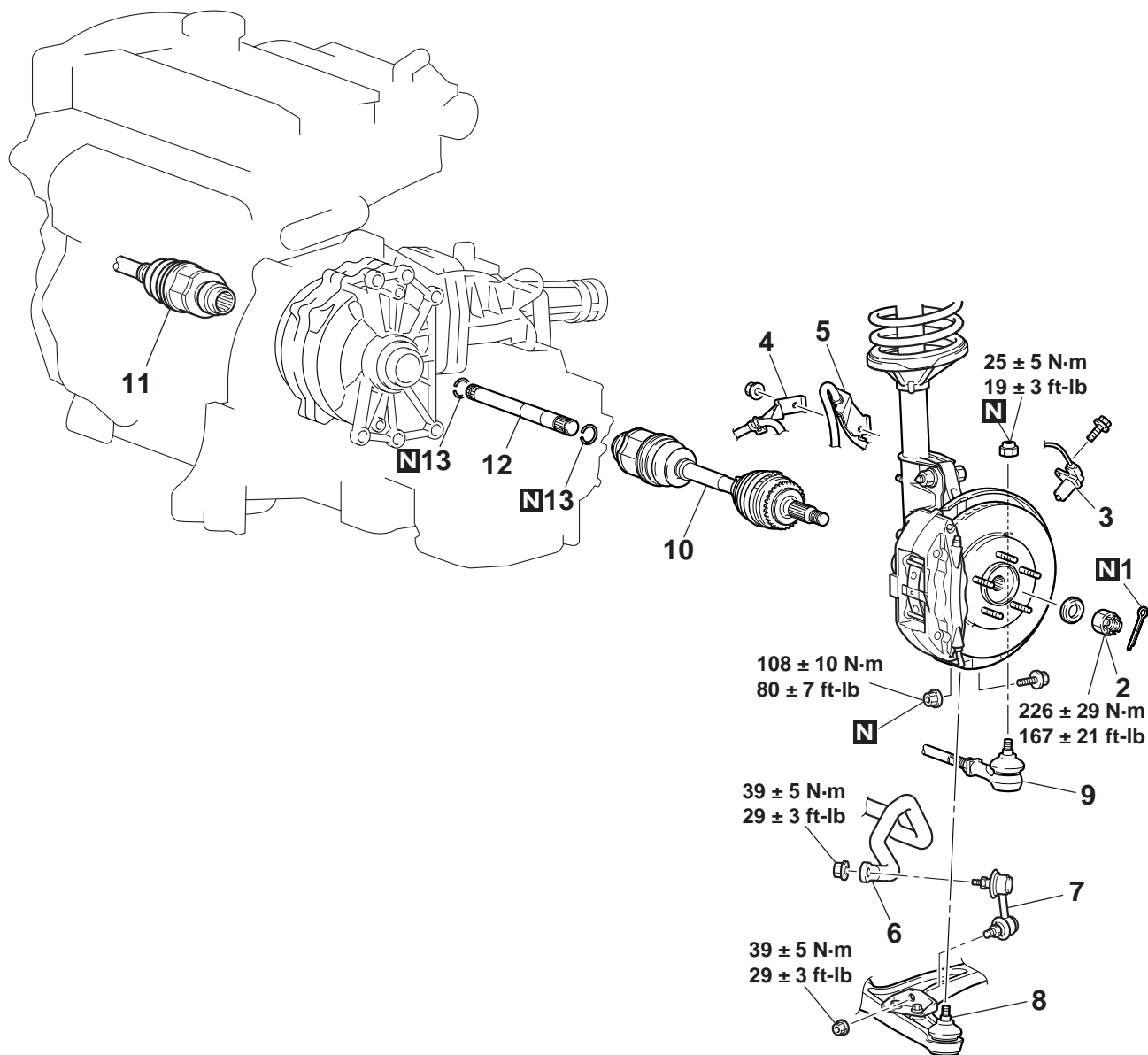
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CAUTION

- If the vehicle is equipped with the Brembo disc brake, during maintenance, take care not to contact the parts or tools to the caliper because the paint of caliper will be scratched. And if there is brake fluid on the caliper, wipe out quickly.
- For vehicles with ABS, do not strike the rotor for wheel speed sensor installed to the BJ outer race of drive shaft against other parts when removing or installing the drive shaft. Otherwise the rotor for wheel speed sensor will be damaged.
- *: Indicates parts which should be temporarily tightened, and then fully tightened after installing the engine into the vehicle.

Pre-removal and Post-installation Operation

- Under Cover Removal and Installation (Refer to GROUP 51, Front Bumper [P.51-2.](#))
- Side Under Cover Removal and Installation (Refer to GROUP 51, Front Bumper [P.51-2.](#))
- Transaxle Oil Draining and Supplying (Refer to [P.22A-9.](#))
- Engine Coolant Draining and Supplying (Refer to Group 14, On-vehicle Service [P.14-18.](#))
- Crossmember Bar Removal and Installation (Refer to GROUP 32, Engine Roll Stopper, Centermember [P.32-6.](#))
- Front Exhaust Pipe Removal and Installation (Refer to GROUP 15, Exhaust Pipe and Main Muffler [P.15-23.](#))
- Air Cleaner, Air Intake Hose Removal and Installation (Refer to GROUP 15, Air Cleaner [P.15-7.](#))
- Strut Tower Bar Removal and Installation (Refer to GROUP 42 [P.42-12.](#))
- Air Hose E, Air By-pass Hose and Turbocharger Bypass Valve, Air Pipe C, Air Hose D, Air Pipe B, Air Hose A Removal and Installation (Refer to GROUP 15, Charge Air Cooler [P.15-8.](#))
- Radiator Removal and Installation (Refer to GROUP14 [P.14-22.](#))



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REMOVAL STEPS

- <<A>> >>B<<
1. SPLIT PIN
 2. DRIVE SHAFT NUT
 3. FRONT SPEED SENSOR
 4. FRONT SPEED SENSOR HARNESS BRACKET
 5. BRAKE HOSE BRACKET
 6. STABILIZER BAR CONNECTION
 7. STABILIZER LINK

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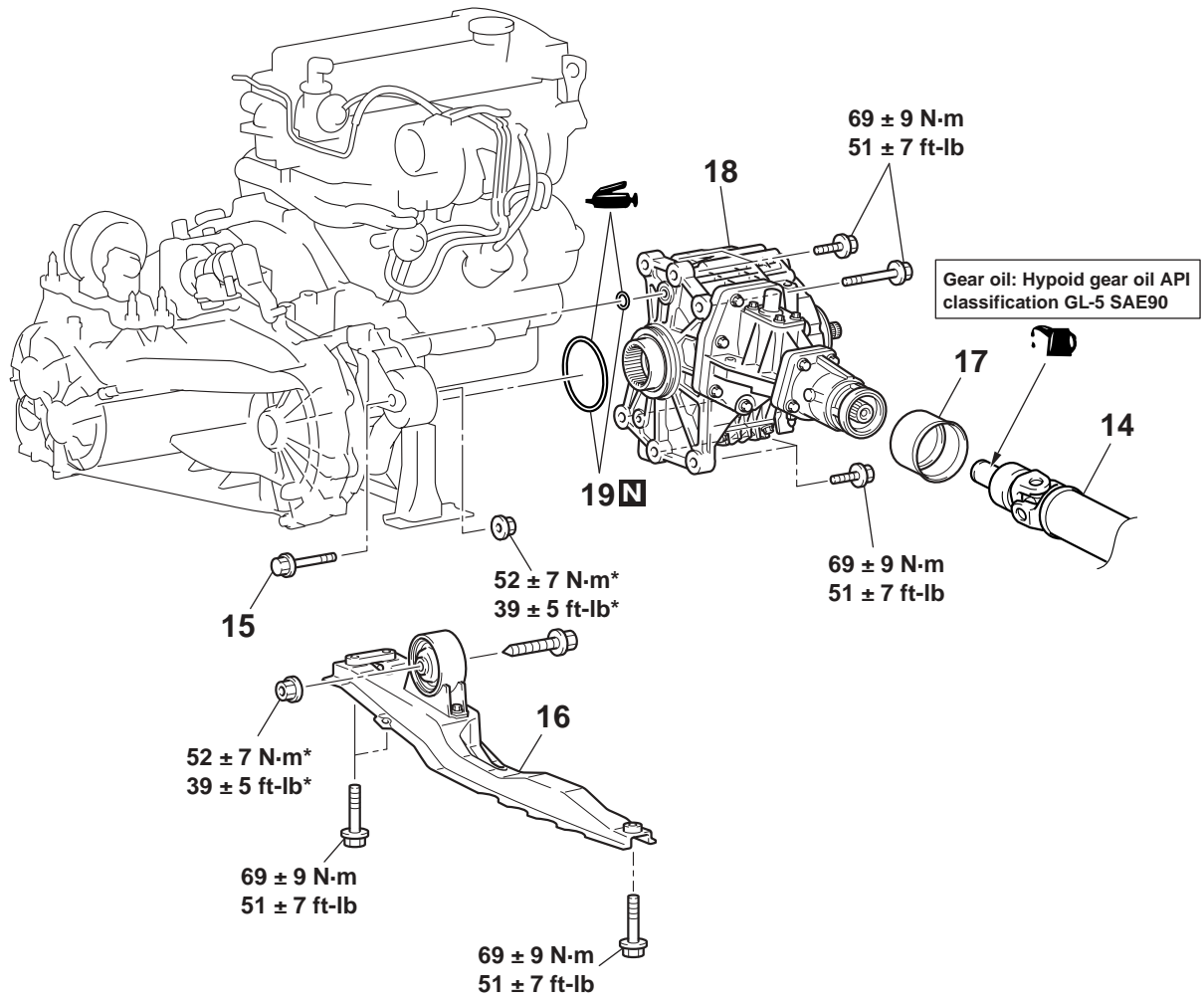
<<C>>

<<C>>

<<D>> >>A<<

REMOVAL STEPS (Continued)

8. LOWER ARM BALL JOINT CONNECTION
9. TIE ROD END CONNECTION
10. DRIVESHAFT <LH> CONNECTION
11. DRIVESHAFT <RH> CONNECTION
12. OUTPUT SHAFT
13. CIRCLIP



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14. FRONT PROPELLER SHAFT
15. REAR ROLL STOPPER
CONNECTION BOLT
16. CENTERMEMBER ASSEMBLY

<<E>>

17. DUST SEAL GUARD
18. TRANSFER ASSEMBLY
19. O-RING

Required Special Tools:

- MB990767: End Yoke Holder
- MB991897: Ball Joint Remover
- MB990241: Axle Shaft Puller
- MB991354: Puller Body
- MB991721: Slide Hammer

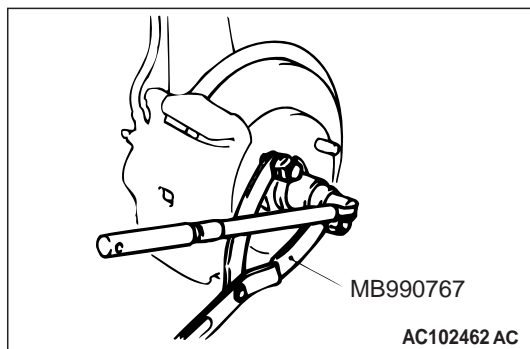
REMOVAL SERVICE POINTS

<<A>> DRIVE SHAFT NUT REMOVAL

⚠ CAUTION

Do not apply pressure to the wheel bearing by the vehicle weight to avoid possible damage when the drive shaft nut is loosened.

Use special tool MB990767 to fix the hub and remove the drive shaft nut.

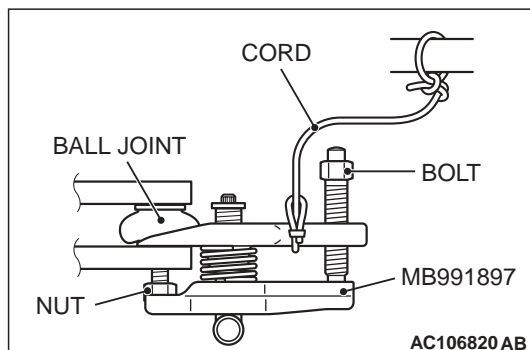


<> LOWER ARM BALL JOINT/TIE ROD END DISCONNECTION

⚠ CAUTION

- Do not remove the nut from ball joint. Loosen it and use special tool MB991897 to avoid possible damage to ball joint threads.
- Hang special tool MB991897 with cord to prevent it from falling.

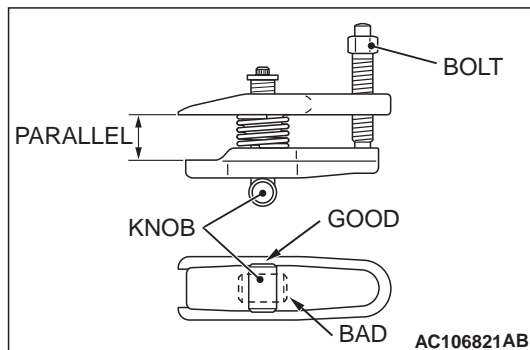
1. Install the special tool MB991897 as shown in the figure.



2. Turn the bolt and knob as necessary to make the jaws of special tool MB991897 parallel, tighten the bolt by hand and confirm that the jaws are still parallel.

NOTE: When adjusting the jaws in parallel, make sure the knob is in the position shown in the figure.

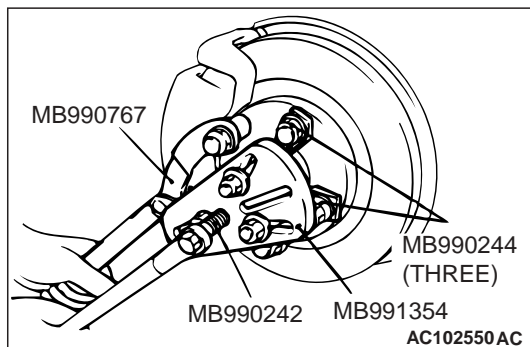
3. Tighten the bolt with a wrench to disconnect the tie rod end.

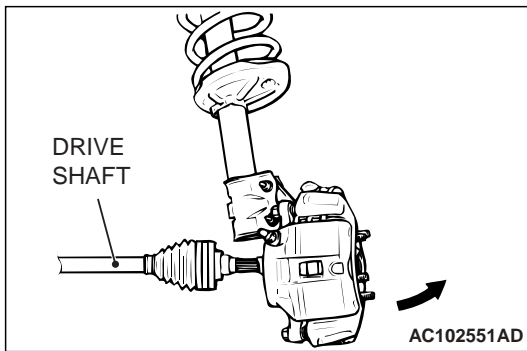


<<C>> DRIVE SHAFT <LH>/DRIVE SHAFT <RH> DISCONNECTION

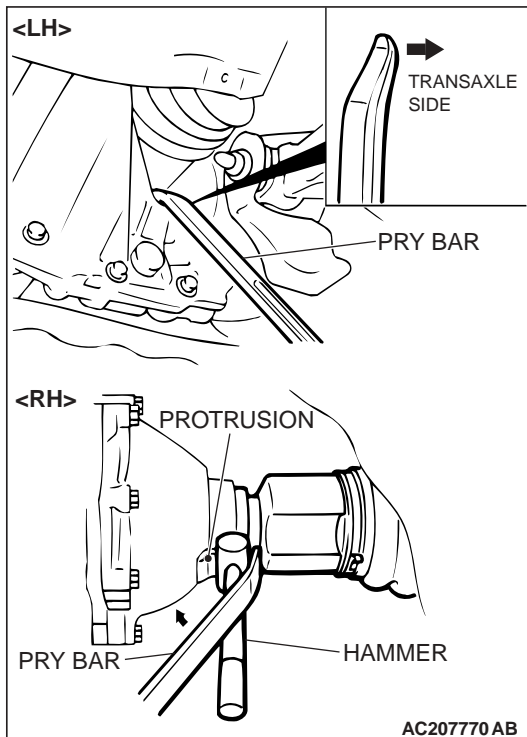
1. <Removal of the disc brake side>

- (1) Use special tools MB990241 (MB990242 and MB990244), MB991354 and MB990767 to push out the drive shaft or the drive shaft and inner shaft assembly from the hub.





- (2) Remove the drive shaft from the hub by pulling the bottom of the brake disc towards you.

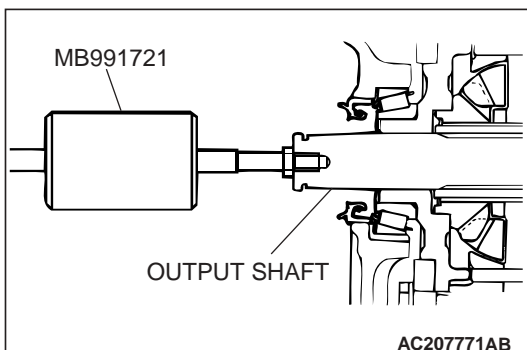


2. <Removal of the transaxle side>

CAUTION

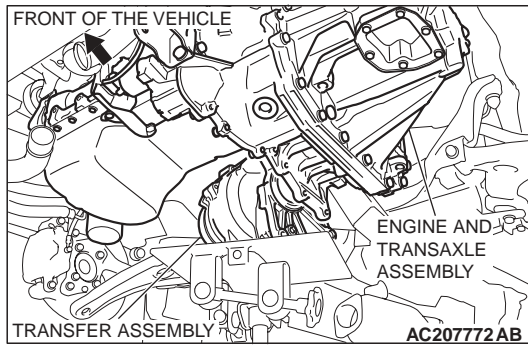
As the TJ may damage when the driveshaft is pulled out from the BJ side, be sure to use the lever.

- (1) As shown in the figure, pull out the transfer shaft <LH> from the transaxle using the pry bar. As shown in the illustration, press a hammer, etc. against the driveshaft <RH>, and pull out the driveshaft from the transfer assembly using the pry shaft.
- (2) Cover with a cloth to prevent foreign particles from entering the transfer.



<<D>> OUTPUT SHAFT REMOVAL

1. Using the special tool (MB991721), remove the output shaft.
2. Cover with a cloth to prevent foreign particles from entering the transaxle case.

**<<E>> TRANSFER ASSEMBLY REMOVAL**

With the engine mount and transaxle assembly towards the front of the vehicle, and remove the transfer assembly from between the engine block and crossmember.

INSTALLATION SERVICE POINTS**>>A<< OUTPUT SHAFT INSTALLATION****⚠ CAUTION**

When installing the output shaft, the drive shaft or the drive shaft and inner shaft assembly, be careful that the spline part of the output shaft, the drive shaft or the drive shaft and inner shaft assembly do not damage the oil seal.

>>B<< DRIVE SHAFT NUT INSTALLATION

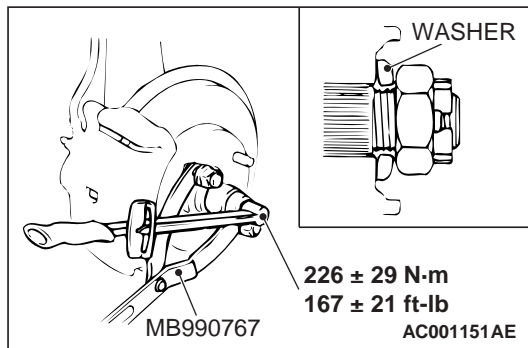
1. Be sure to install the drive shaft washer in the specified direction.

⚠ CAUTION

Before securely tightening the drive shaft nuts, make sure there is no load on the wheel bearings. Otherwise the wheel bearing will be damaged.

2. Using special tool MB990767, tighten the drive shaft nut to the specified torque.

Tightening torque: 226 ± 29 N·m (167 ± 21 ft-lb)



TRANSAXLE ASSEMBLY

REMOVAL AND INSTALLATION

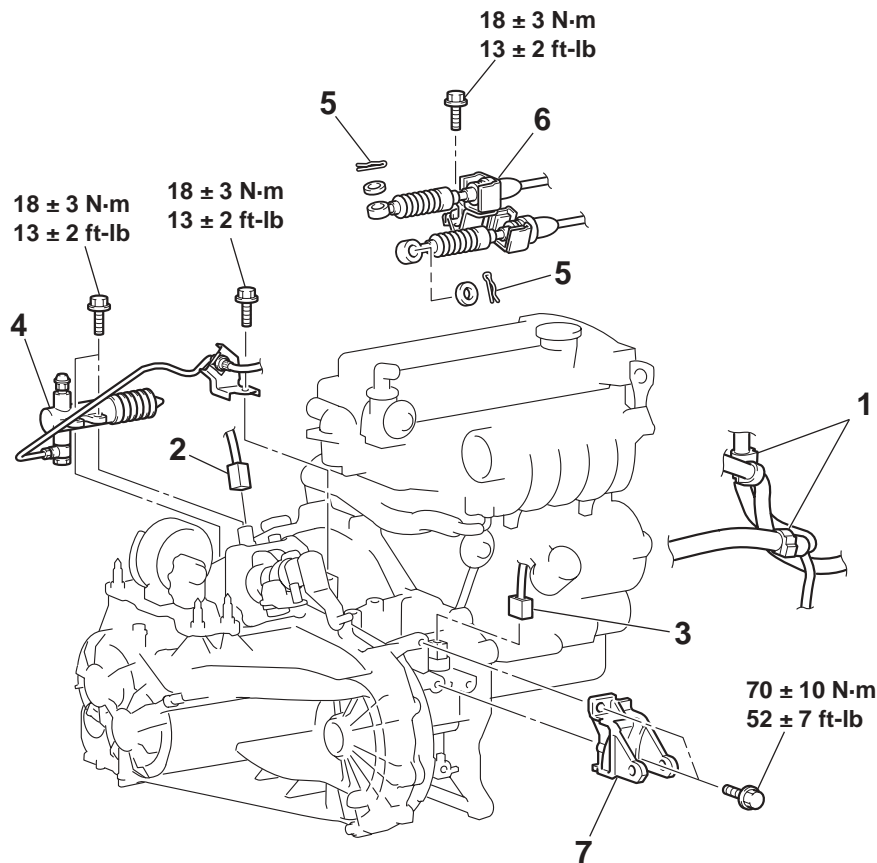
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CAUTION

*: Indicates parts which should be temporarily tightened, and then fully tightened after installing the engine into the vehicle.

Pre-removal and Post-installation Operation

- Transfer Assembly Removal and Installation (Refer to P.22A-15.)
- Starter Motor Removal and Installation (Refer to GROUP 16 P.16-24.)
- Air Cleaner Bracket Removal and Installation (Refer to GROUP 15, Air Cleaner P.15-7.)
- Rear Roll Rod Assembly and Rear Roll Rod Bracket Removal and Installation (Refer to GROUP 32, Engine Roll Stopper and Center member P.32-6).



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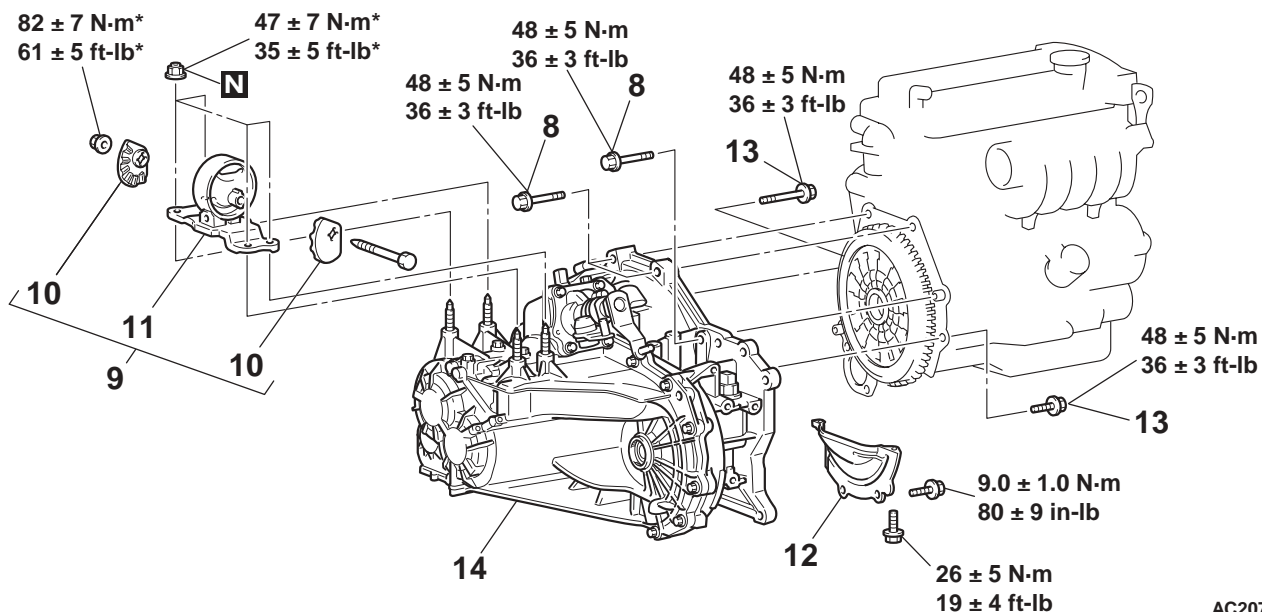
REMOVAL STEPS

1. TRANSAXLE HARNESS CLAMP
2. BACK-UP LAMP SWITCH CONNECTOR
3. VEHICLE SPEED SENSOR CONNECTOR
4. CLUTCH RELEASE CYLINDER AND CLUTCH OIL PIPE

<<A>>

REMOVAL STEPS (Continued)

5. SNAP PIN
6. CABLE BRACKET AND CABLE ASSEMBLY <TRANSAXLE SIDE>
7. REAR ROLL MOUNT BRACKET
 - ENGINE AND TRANSAXLE ASSEMBLY SUPPORTING



AC207692AB

REMOVAL STEPS

- <<A>> 8. TRANSAXLE ASSEMBLY UPPER PART COUPLING BOLTS <<C>>
9. TRANSAXLE MOUNT ASSEMBLY
- >>A<< 10. TRANSAXLE MOUNT STOPPER
- <> 11. TRANSAXLE MOUNT BRACKET
- ENGINE ASSEMBLY SUPPORTING

REMOVAL STEPS (Continued)

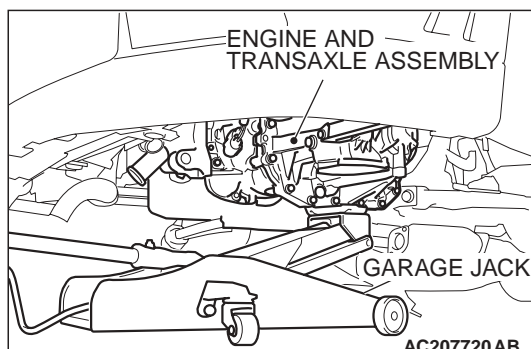
- CLUTCH RELEASE BEARING CONNECTION
12. BELL HOUSING COVER
13. TRANSAXLE ASSEMBLY LOWER PART COUPLING BOLTS
14. TRANSAXLE ASSEMBLY

Required Special Tools:

- MB991453: Engine Hanger Assembly
- MB991454: Engine Hanger Balancer
- MZ203827: Engine Lifter
- MB991895: Engine Hanger
- MB991928: Engine Hanger

REMOVAL SERVICE POINTS**<<A>> ENGINE AND TRANSAXLE ASSEMBLY SUPPORTING/TRANSAXLE MOUNT ASSEMBLY REMOVAL**

While supporting the engine and transaxle assembly with a garage jack, remove the transaxle mount assembly.

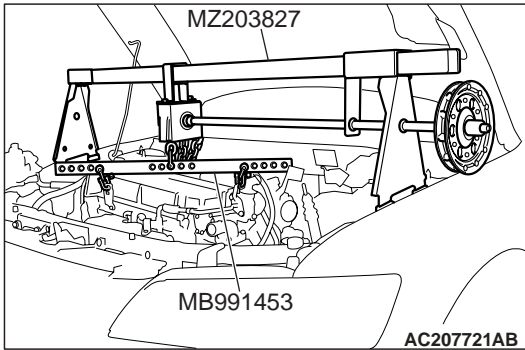


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<> ENGINE ASSEMBLY SUPPORT

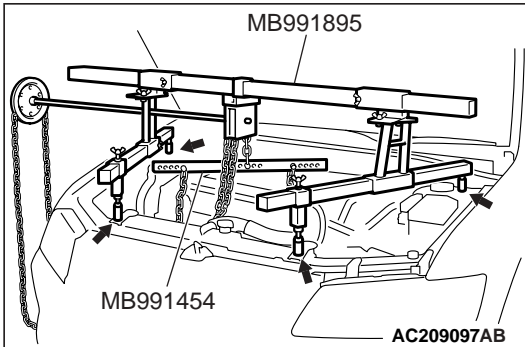
1. <Engine lifter (special tool MZ203827) is used>

- (1) Set the special tools MB991453 and MZ203827 to the vehicle to support the engine assembly.
- (2) Set special tools MB991453 to hold the engine/transaxle assembly.



2. <Engine hanger (special tool MB991895) is used>

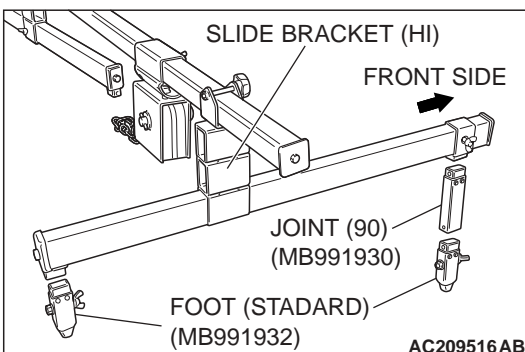
- (1) Set special tool MB991895 to the strut mounting nuts and the radiator support upper insulator mounting bolts, which are located in the engine compartment, as shown.
- (2) Set special tools MB991454 to hold the engine/transaxle assembly.



3. <Engine hanger (special tool MB991928) is used>

- (1) Assemble the engine hanger (special tool MB991928).
Set following parts to the base hanger.

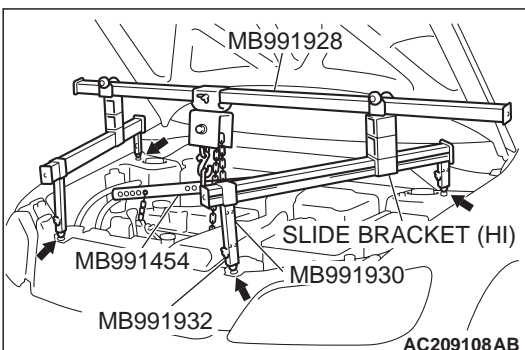
- Slide bracket (HI)
- Foot (standard) (MB991932)
- Joint (90) (MB991930)

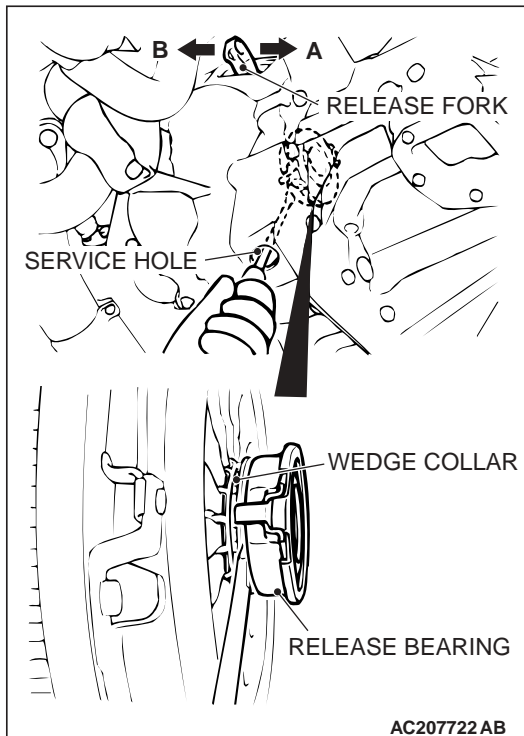


- (2) Set the engine hanger (special tool MB991928) to the strut mounting nuts and the radiator support upper insulator mounting bolts, which are located in the engine compartment, as shown.

NOTE: Adjust the engine hanger balance by sliding the slide bracket (HI).

- (3) Set special tools MB991454 to hold the engine/transaxle assembly.





<<C>> CLUTCH RELEASE BEARING SEPARATION

⚠ CAUTION

If it is hard to turn the screwdriver (to pry off the release bearing), remove the screwdriver once and repeat the above procedure after pushing the release fork fully in the direction A two to three times. Forcibly prying can cause the release bearing to be damaged.

1. Remove the cover from the service hole in the clutch housing.
2. While pushing the release fork by hand in the direction A, insert a flap-tip screwdriver between the release bearing and the wedge collar.

⚠ CAUTION

Be sure to push the release fork in the direction A before inserting a screwdriver.

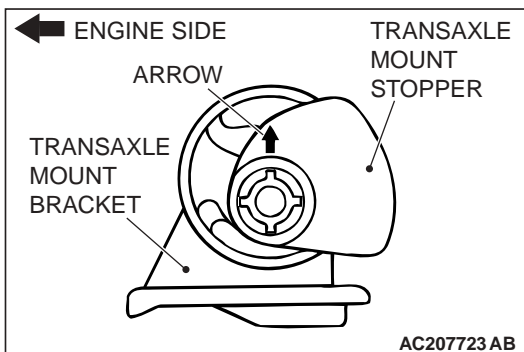
3. Separate the release bearing from the wedge collar by prying with the screwdriver (turning the screwdriver grip 90°).

NOTE: The release fork is forced to move fully in the direction B by the return spring as soon as it is separated from the wedge collar.

INSTALLATION SERVICE POINTS

>>A<< TRANSAXLE MOUNT STOPPER INSTALLATION

Install the transaxle mount stopper so that the arrow points as shown in the illustration.



SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

M1221006600142

ITEM	SPECIFICATION
Transaxle control	
Gearshift cable and select cable assembly attaching bolt	12 ± 2 N·m (102 ± 22 in-lb)
Gearshift lever base bracket attaching bolt	12 ± 2 N·m (102 ± 22 in-lb)
Shift lever assembly	
Gearshift select lever retainer nut	10 ± 1 N·m (84 ± 13 in-lb)
Gearshift lever retainer nut	14 ± 2 N·m (120 ± 22 in-lb)
Transfer assembly	
Centermember attaching bolt	69 ± 9 N·m (51 ± 7 ft-lb)
Crossmember bar attaching bolt	49 ± 10 N·m (37 ± 7 ft-lb)
Driveshaft connecting nut	226 ± 29 N·m (167 ± 21 ft-lb)
Front roll stopper bracket retainer nut	52 ± 7 N·m (39 ± 5 ft-lb)
Lower arm connecting nut	108 ± 10 N·m (80 ± 7 ft-lb)
Rear roll stopper bracket retainer nut	52 ± 7 N·m (39 ± 5 ft-lb)
Stabilizer link connecting nut	39 ± 5 N·m (29 ± 3 ft-lb)
Tie rod end connecting nut	25 ± 5 N·m (19 ± 3 ft-lb)
Transfer assembly part coupling bolt	69 ± 9 N·m (51 ± 7 ft-lb)
Transfer oil drain plug	32 ± 2 N·m (23 ± 2 ft-lb)
Transfer oil filler plug	32 ± 2 N·m (23 ± 2 ft-lb)
Transaxle assembly	
Bell housing cover attaching bolt (transaxle side)	9.0 ± 1.0 N·m (80 ± 9 in-lb)
Bell housing cover attaching bolt (engine side)	26 ± 5 N·m (19 ± 4 ft-lb)
Clutch release cylinder and clutch oil pipe attaching bolt	18 ± 3 N·m (13 ± 2 ft-lb)
Rear roll mount bracket attaching bolt	70 ± 10 N·m (52 ± 7 ft-lb)
Shift cable and select cable assembly attaching bolt	18 ± 3 N·m (13 ± 2 ft-lb)
Transaxle assembly lower part coupling bolt	48 ± 5 N·m (36 ± 3 ft-lb)
Transaxle assembly upper part coupling bolt	48 ± 5 N·m (36 ± 3 ft-lb)
Transaxle mount bracket attaching nut	47 ± 7 N·m (35 ± 5 ft-lb)
Transaxle mount stopper attaching nut	82 ± 7 N·m (61 ± 5 ft-lb)
Transaxle oil drain plug	32 ± 2 N·m (23 ± 2 ft-lb)
Transaxle oil filler plug	32 ± 2 N·m (23 ± 2 ft-lb)

LUBRICANT

M1221000400140

ITEM	SPECIFIED LUBRICANTS	QUANTITY
Transaxle oil dm ³ (qt)	Gear oil API classification GL-4 SAE 75W-85W or 75W-90	2.8 (2.9)
Transfer oil dm ³ (qt)	Hypoid gear oil API classification GL-5 SAE90	0.55 (0.58)

NOTES

GROUP 22B

MANUAL TRANSAXLE OVERHAUL

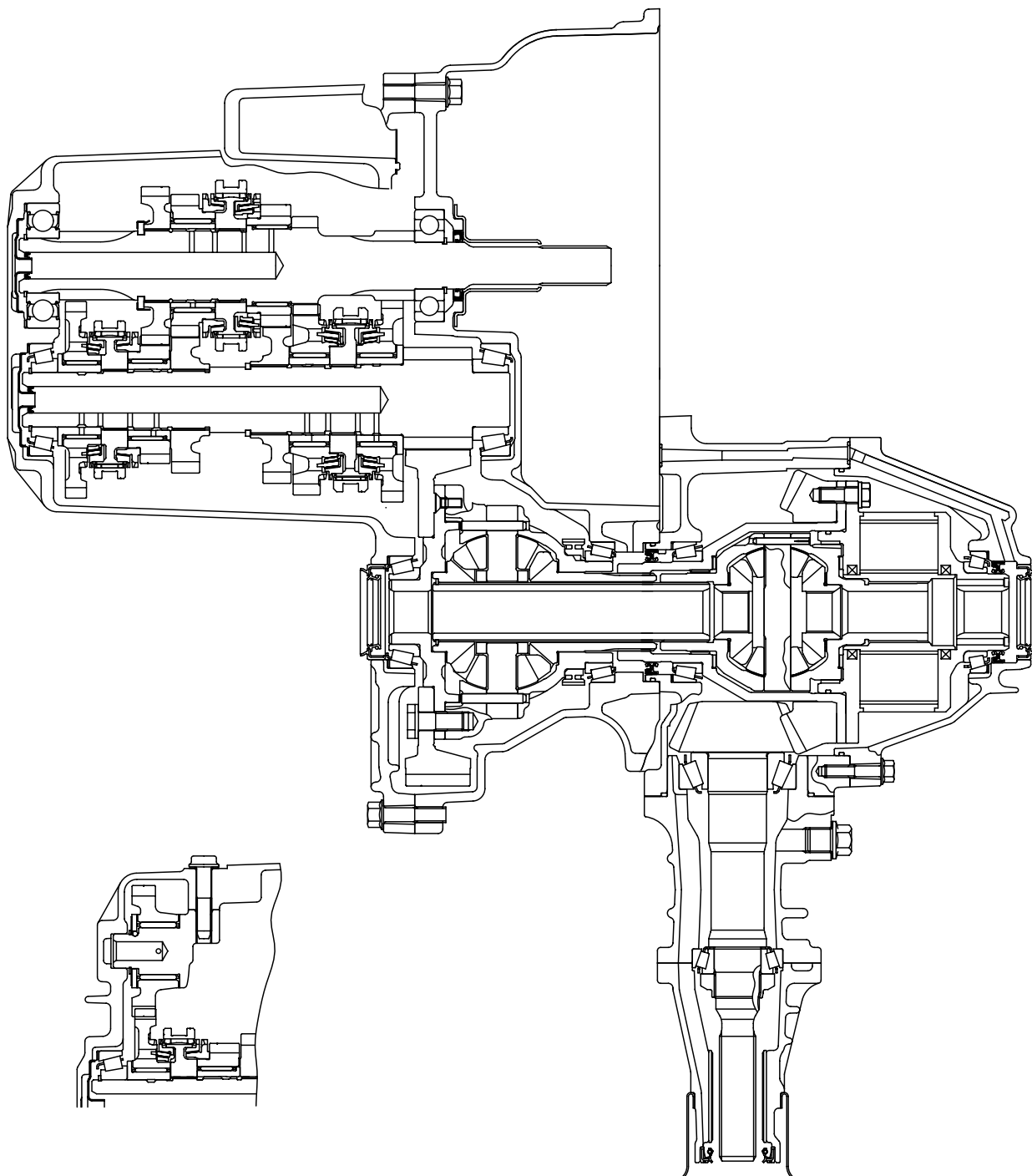
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GENERAL INFORMATION

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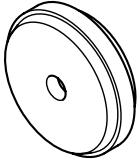
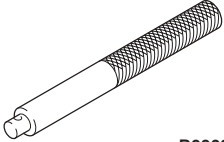
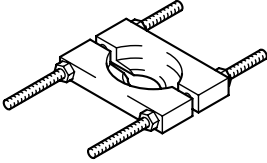
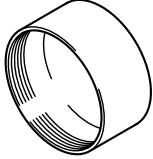
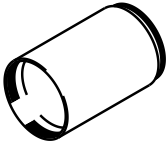
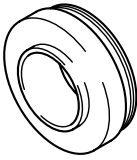
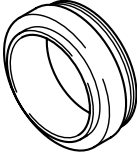
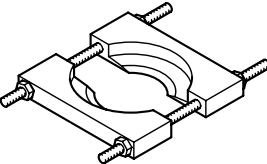
SECTIONAL VIEW

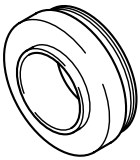
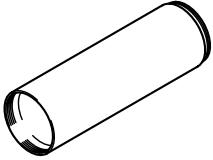
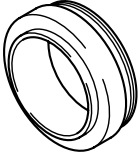
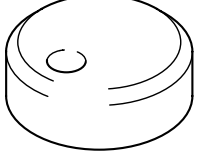
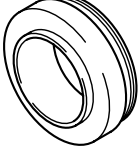
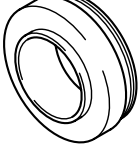
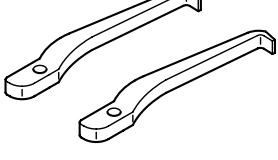
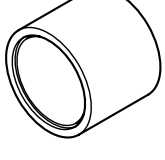


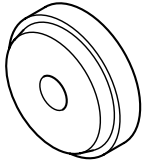
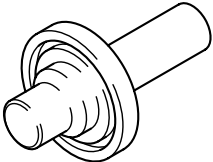
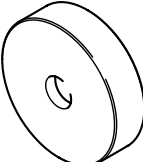
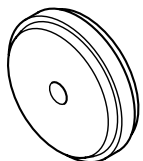

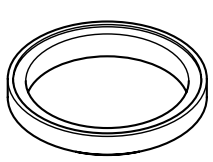
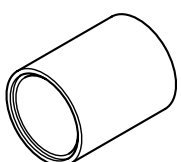
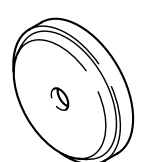
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SPECIAL TOOLS

M1222000600095

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
	MB990935 Installer adapter	MB990935-01 or General service tool	Installation of output shaft taper roller bearing outer race and center differential rear taper roller bearing outer race
 B990938	MB990938 Handle	MB990938-01	Use with Installer adapter
	MD998801 Bearing remover	MD998348-01 or General service tool	Installation and removal of gears, bearings and sleeves
	MD998812 Installer cap	General service tool	Use with Installer and Installer adapter
	MD998813 Installer-100	General service tool	Use with Installer cap and Installer adapter
	MD998818 Installer adapter (38)	MD998818	Installation of input shaft bearing
	MD998825 Installer adapter (52)	General service tool	Installation of 1st speed gear sleeve, 3rd-4th speed synchronizer hub, 4th speed gear sleeve, 5th speed gear and thrust plate stopper
	MD998917 Bearing remover	General service tool	Installation and removal of gears, bearing and sleeves

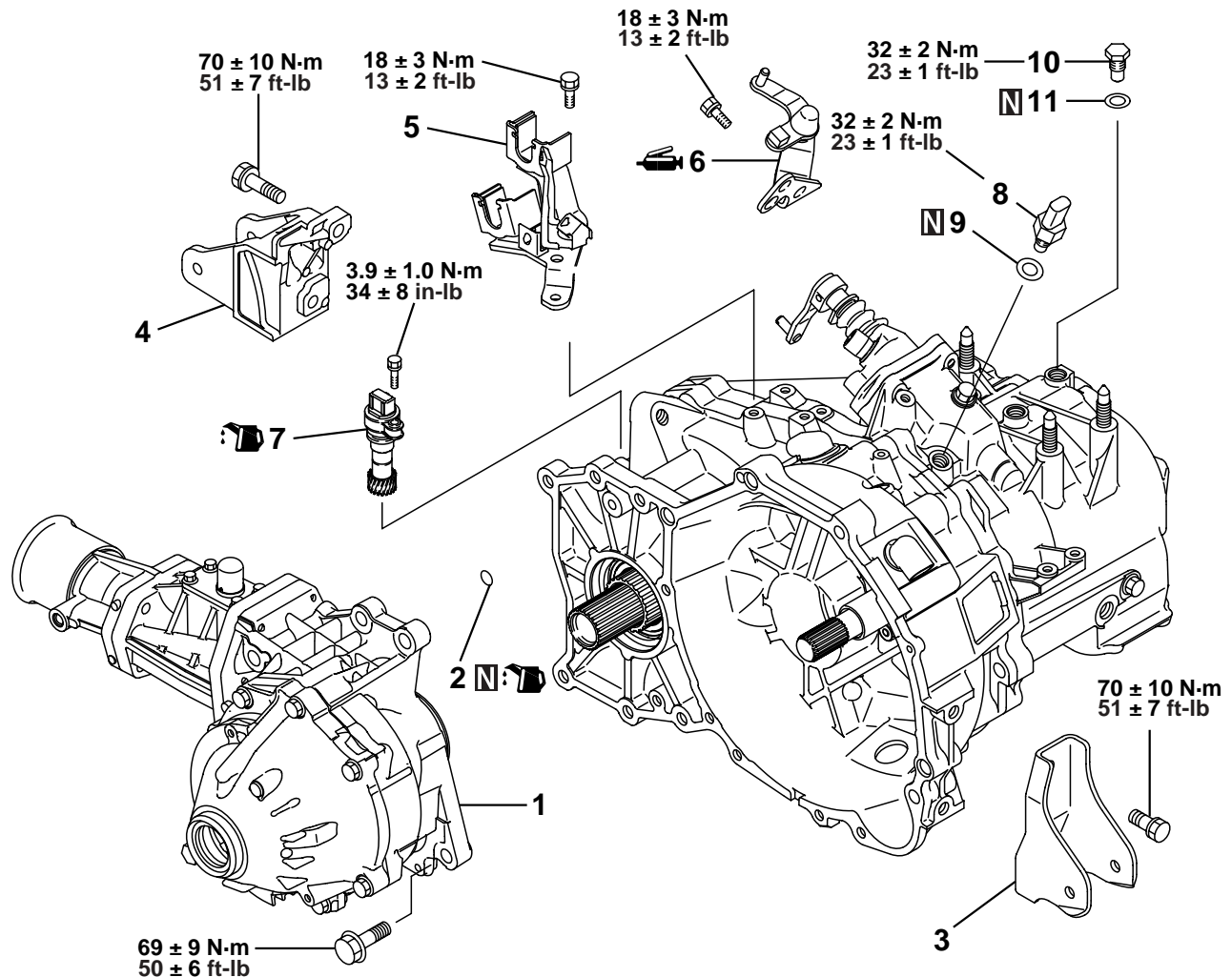
TOOL	TOOL NUMBER AND NAME	SUPERSESION	APPLICATION
	MD998819 Installer adapter (40)	General service tool	Installation of output shaft taper roller bearing
	MD998814 Installer-200	MIT304180	Use with Installer cap and Installer adapter
	MD998824 Installer adapter (50)	General service tool	Installation of 1st-2nd speed synchronizer hub, 2nd speed gear sleeve and 3rd speed gear
	MD998364 Camshaft oil seal installer	MD998364-01	Installation of gear, bearing and sleeve
	MD998821 Installer adapter (44)	MD998821	Installation of 4th speed gear, 5th speed gear sleeve and 5th-reverse speed synchronizer hub
	MD998820 Installer adapter (42)	MIT215013	Installation of reverse gear bearing sleeve
	MD999566 Claw	General service tool	Removal of taper roller bearing outer race
	MB991445 Bushing remover and installer base	MB991445	Installation of differential front taper roller bearing outer race

TOOL	TOOL NUMBER AND NAME	SUPERSESION	APPLICATION
	MB990928 Installer adapter	MB990928-01	Installation of input shaft oil seal
	MD998800 Oil seal installer	General service tool	Installation of differential oil seal and transfer oil seal
	MB990930 Installer adapter	MB990930-01	Installation of center differential front taper roller bearing
	MB990937 Installer adapter	MB990937 or General service tool	Installation of center differential front taper roller bearing and transfer oil seal
	MD998824 Installer adapter (50)	General service tool	Installation of center differential rear taper roller bearing
	MB990887 Ring	—	Installation of transfer oil seal
	MB990891 Bushing remover installer base	—	Installation of transfer oil seal
	MB990936 Installer adapter	MB990936-01 or General service tool	Installation of transfer oil seal

TRANSAXLE

DISASSEMBLY AND ASSEMBLY

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DISASSEMBLY STEPS

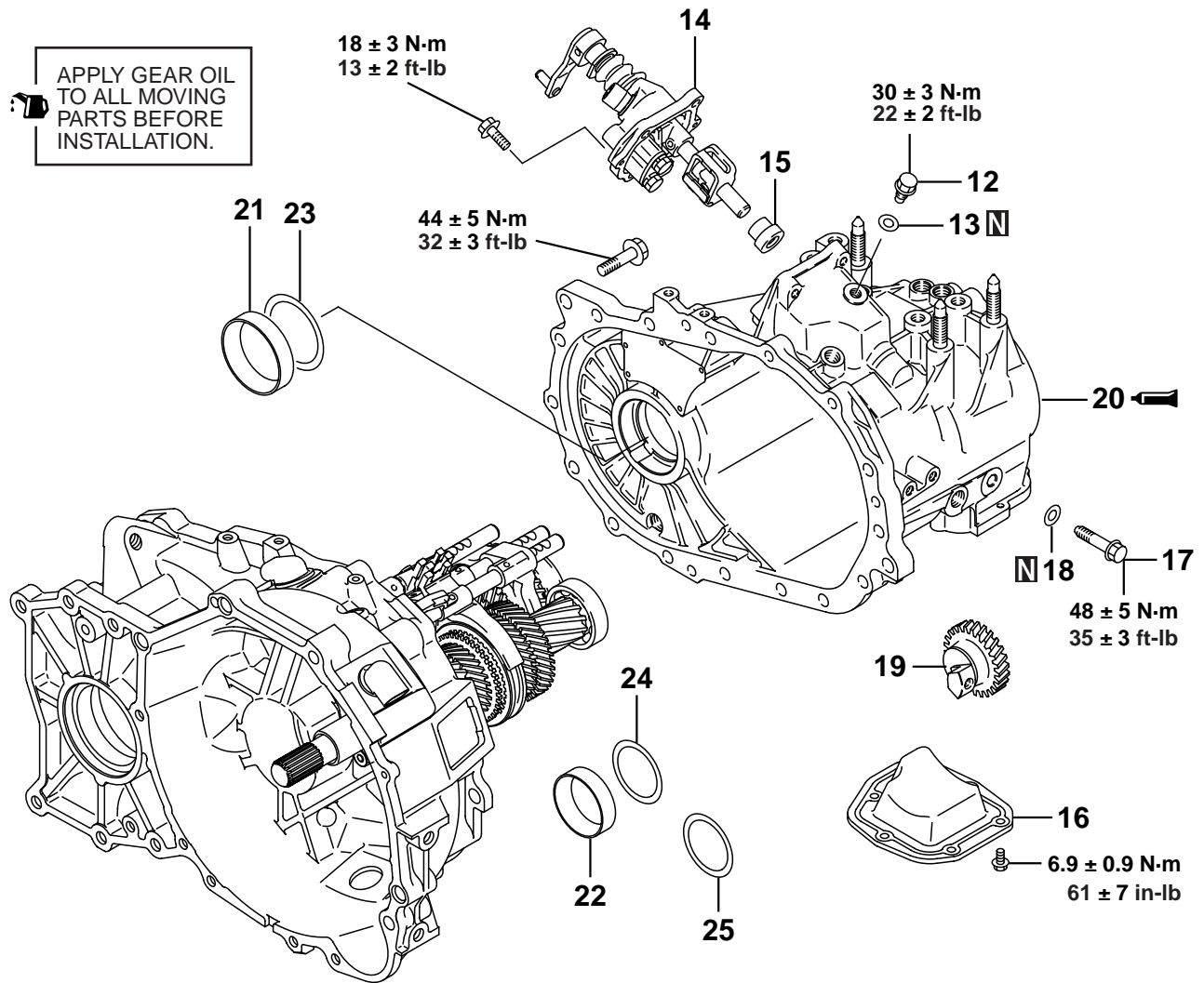
- >>J<<
1. TRANSFER ASSEMBLY
 2. O-RING
 3. ROLL STOPPER BRACKET, FRONT
 4. ROLL STOPPER BRACKET, REAR
 5. SHIFT CABLE BRACKET

DISASSEMBLY STEPS

- >>I<<
>>H<<
6. SELECT LEVER
 7. SPEEDOMETER GEAR
 8. BACKUP LIGHT SWITCH
 9. GASKET
 10. POPPET
 11. GASKET

Required Special Tools:

- MB990935: Installer Adapter
- MB990938: Handle



AK203128AC

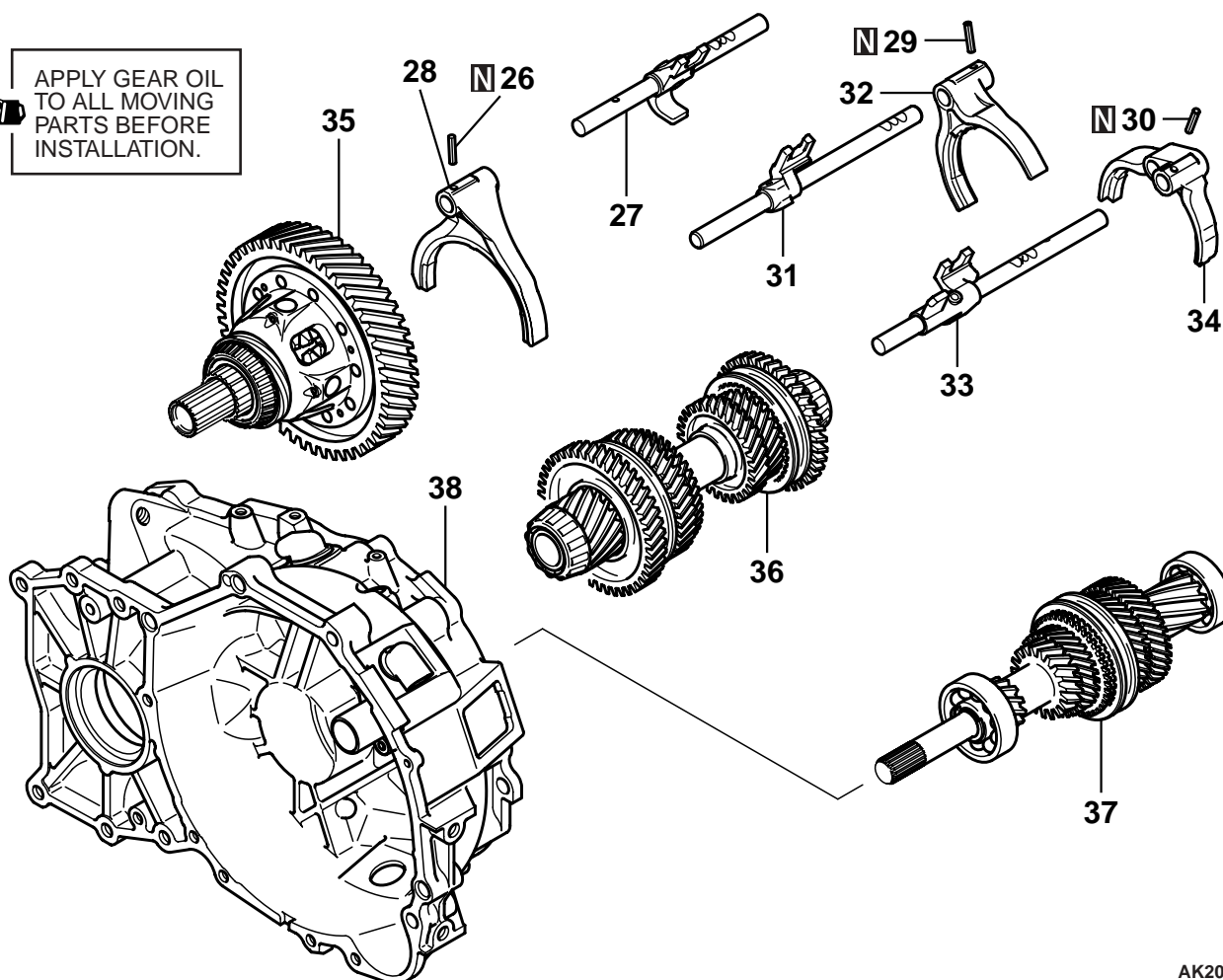
DISASSEMBLY STEPS

- 12. INTERLOCK PLATE BOLT
- 13. GASKET
- >>G<< 14. CONTROL HOUSING
- 15. NEUTRAL RETURN SPRING
- >>F<< 16. UNDER COVER
- 17. REVERSE IDLER GEAR SHAFT BOLT
- 18. GASKET

DISASSEMBLY STEPS

- 19. REVERSE IDLER GEAR
- >>E<< 20. TRANSAXLE CASE
- >>D<< 21. OUTER RACE
- >>D<< 22. OUTER RACE
- >>D<< 23. SPACER
- >>D<< 24. SPACER
- >>D<< 25. SPACER

APPLY GEAR OIL
TO ALL MOVING
PARTS BEFORE
INSTALLATION.



AK201617AC

DISASSEMBLY STEPS

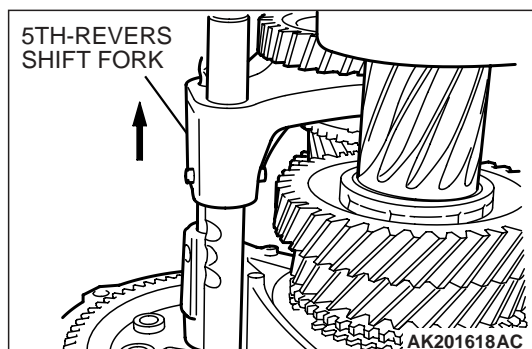
- >>C<< 26. SPRING PIN
 27. 1ST-2ND SPEED SHIFT RAIL
 28. 1ST-2ND SPEED SHIFT FORK
 >>C<< 29. SPRING PIN
 <<A>> >>C<< 30. SPRING PIN
 <> >>B<< 31. 3RD-4TH SPEED SHIFT RAIL
 <> >>B<< 32. 3RD-4TH SPEED SHIFT FORK

DISASSEMBLY STEPS

- <> >>B<< 33. 5TH-REVERSE SPEED SHIFT RAIL
 <> >>B<< 34. 5TH-REVERSE SPEED SHIFT FORK
 <<C>> >>A<< 35. CENTER DIFFERENTIAL
 <<C>> >>A<< 36. OUTPUT SHAFT
 <<C>> >>A<< 37. INPUT SHAFT
 38. CLUTCH HOUSING

DISASSEMBLY SERVICE POINTS**<<A>> SPRING PIN REMOVAL**

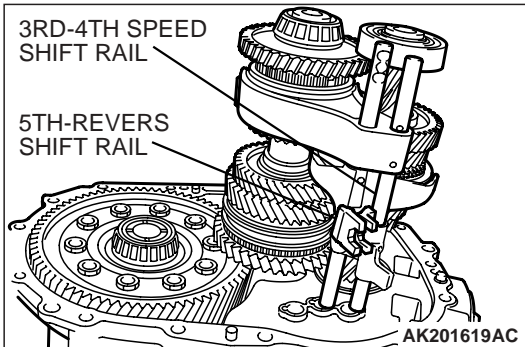
1. Shift the 5th-reverse shift fork in the direction shown in the illustration.
2. Using a pin punch, remove the spring pin from the shift fork and rail.



AK201618AC

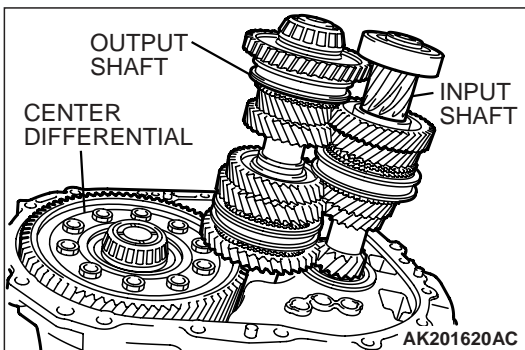
<> 3RD-4TH SPEED SHIFT RAIL/3RD-4TH SPEED SHIFT FORK/5TH-REVERSE SPEED SHIFT RAIL/5TH-REVERSE SPEED SHIFT FORK REMOVAL

1. Pull out the shift rails from the shift rail holes in the clutch housing.
2. Remove the shift rails together with the shift forks.



<<C>> CENTER DIFFERENTIAL/OUTPUT SHAFT/INPUT SHAFT REMOVAL

Remove the input and output shafts together.

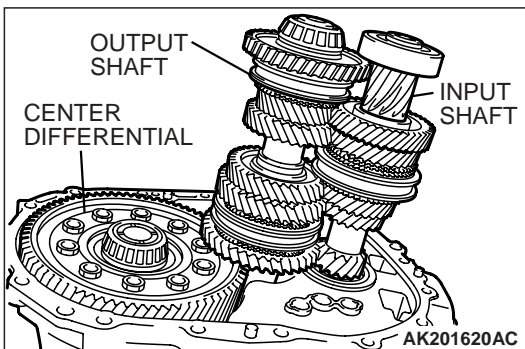


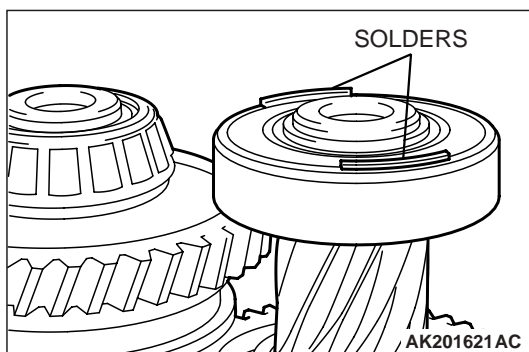
ADJUSTMENT BEFORE ASSEMBLY

SPACER SELECTION FOR ADJUSTING INPUT SHAFT END PLAY/OUTPUT SHAFT PRELOAD/CENTER DIFFERENTIAL PRELOAD

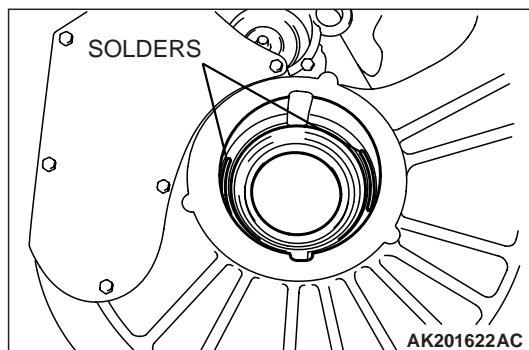
1. Install the input shaft, output shaft and center differential as a set to the clutch housing.

NOTE: If necessary, replace the input shaft, output shaft, center differential case and/or bearings before carrying out these adjustments.



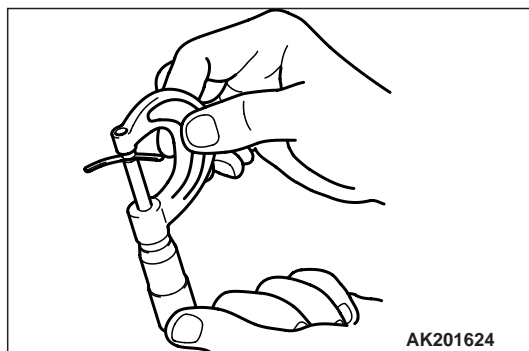
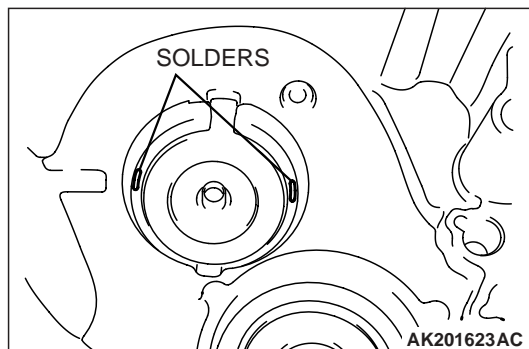


2. Put solders [1.6 mm (0.063 inch) diameter, about 10 mm (0.39 inch) long] on the input shaft rear bearing at the positions shown in the illustration.



3. Put solders [1.6 mm (0.063 inch) diameter, about 10 mm (0.39 inch) long] on the transaxle case at the positions shown in the illustration.
4. Install the bearing outer races of the center differential and output shaft.
5. Install the transaxle case and tighten the bolts to the specified torque.

Tightening torque: 44 ± 5 N·m (32 ± 3 ft-lb)



6. Remove the transaxle case.
7. Remove the outer races and take out the crushed solders.
8. Measure the thickness of the crushed solder with a micrometer and select spacers that will provide the standard end play/preload value.

Standard value:

Input shaft end play: 0.05 – 0.17 mm (0.0020 – 0.0067 inch)

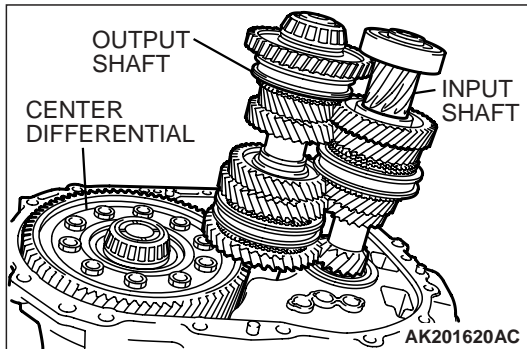
Output shaft preload: 0.13 – 0.18 mm (0.0051 – 0.0071 inch)

Center differential case preload: 0.05 – 0.11 mm (0.0020 – 0.0043 inch)

ASSEMBLY SERVICE POINTS

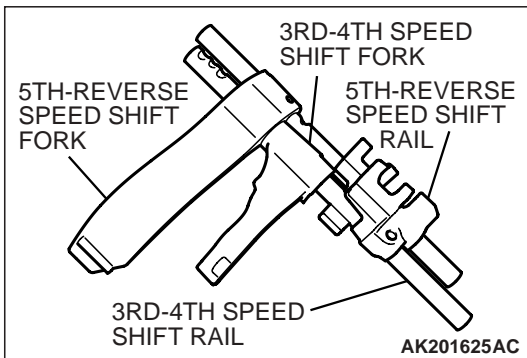
>>A<< INPUT SHAFT/OUTPUT SHAFT/CENTER DIFFERENTIAL INSTALLATION

Install the input shaft, output shaft and center differential as a set.

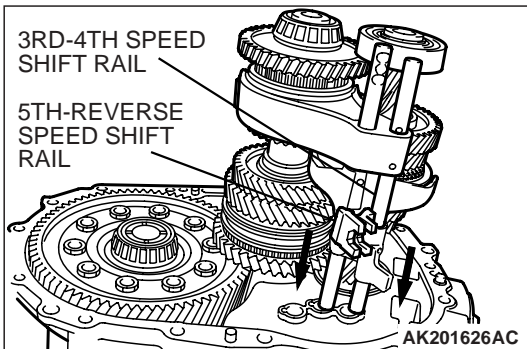


>>B<< 5TH-REVERSE SPEED SHIFT FORK/5TH-REVERSE SPEED SHIFT RAIL/3RD-4TH SPEED SHIFT FORK/3RD-4TH SPEED SHIFT RAIL INSTALLATION

1. Assemble the 3rd-4th speed shift rail and fork, and 5th-reverse speed shift rail and fork.

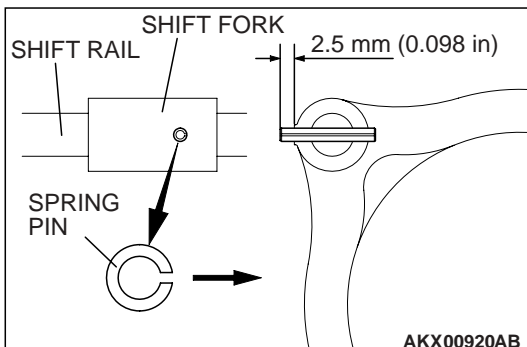


2. Fit each shift fork in the groove of synchronizer sleeve and install the shift fork and rail assembly.
3. Insert the 3rd-4th speed shift rail and 5th speed-reverse shift rail into the rail hole in the clutch housing.



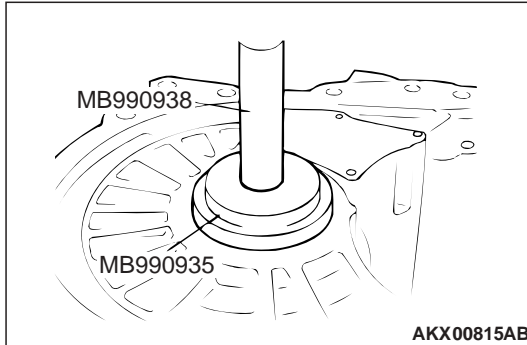
>>C<< SPRING PIN INSTALLATION

1. Align the pin holes in the shift rail and shift fork.
2. Insert the new spring pin. Push it in so that the slit and center axis of the rail are aligned.



>>D<< SPACER AND OUTER RACE INSTALLATION

1. Install the spacer selected in the section "ADJUSTMENT BEFORE ASSEMBLY."
2. Using special tools MB990935 and MB990938, press install the outer race into the transaxle case.



>>E<< TRANSAXLE CASE INSTALLATION

⚠ CAUTION

Squeeze out the sealant uniformly, while making sure that it is not broken or excessively applied.

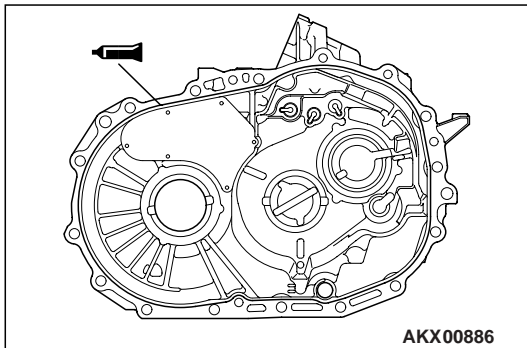
1. Apply a 2 mm (0.08 inch) diameter bead of sealant (Mitsubishi Genuine Part number MD997740 or equivalent) to the illustrated position of the transaxle case.

NOTE: Be sure to install the transaxle case while the sealant is wet (within 15 minutes).

2. Install the transaxle case.
3. Tighten the transaxle case mounting bolts to the specified torque.

Tightening torque: 44 ± 5 N·m (32 ± 3 ft·lb)

NOTE: After installation, keep the sealed area away from the oil for approximately one hour.



>>F<< UNDER COVER INSTALLATION

⚠ CAUTION

Squeeze out the sealant uniformly, while making sure that it is not broken or excessively applied.

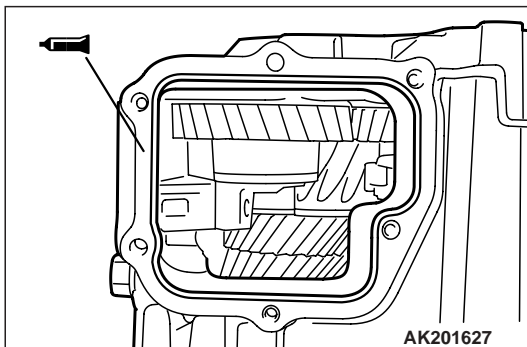
1. Apply a 2 mm (0.08 inch) diameter bead of sealant (Mitsubishi Genuine Part number MD997740 or equivalent) to the illustrated position of the transaxle case.

NOTE: Be sure to install the case quickly while the sealant is wet (within 15 minutes).

2. Install the under cover to the transaxle case and tighten the bolts to specified torque.

Tightening torque: 6.9 ± 0.9 N·m (61 ± 7 in·lb)

NOTE: After installation, keep the sealed area away from the oil for approximately one hour.



>>G<< CONTROL HOUSING INSTALLATION

⚠ CAUTION

Squeeze out the sealant uniformly, while making sure that it is not broken or excessively applied.

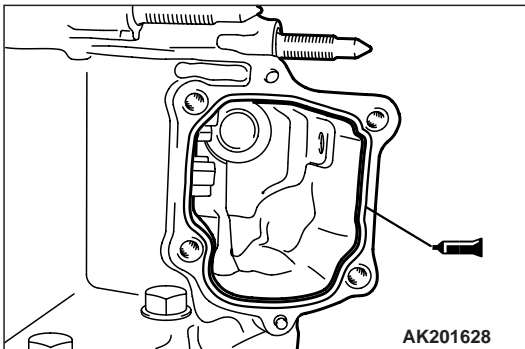
1. Apply a 0.2 mm (0.08 inch) diameter bead of sealant (Mitsubishi Genuine Part number MD997740 or equivalent) to the illustrated position of the transaxle case.

NOTE: Be sure to install the case quickly while the sealant is wet (within 15 minutes).

2. Install the control housing to the transaxle case and tighten the bolts to specified torque.

Tightening torque: 18 ± 3 N·m (13 ± 2 ft-lb)

NOTE: After installation, keep the sealed area away from the oil for approximately one hour.

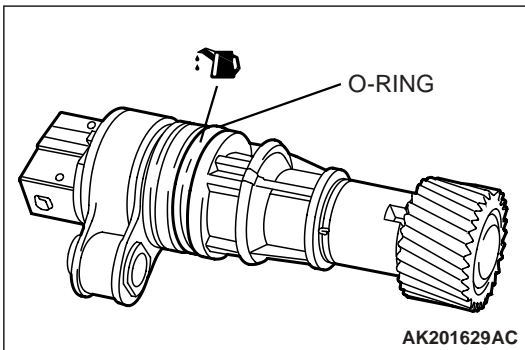


>>H<< SPEEDOMETER GEAR INSTALLATION

1. Apply gear oil (Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4) to the O-ring of the speedometer gear.

2. Tighten the bolt to specified torque.

Tightening torque: 3.9 ± 1.0 N·m (34 ± 8 in-lb)

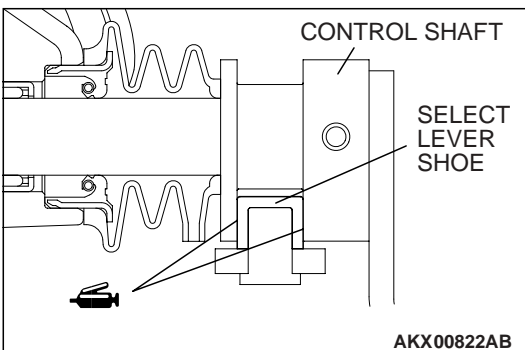


>>I<< SELECT LEVER INSTALLATION

1. Apply grease (Mitsubishi Genuine Part number 0101011 or equivalent) to the control shaft sliding portion of the select lever shoe.

2. Install the select lever and tighten the bolts to specified torque.

Tightening torque: 18 ± 3 N·m (13 ± 2 ft-lb)

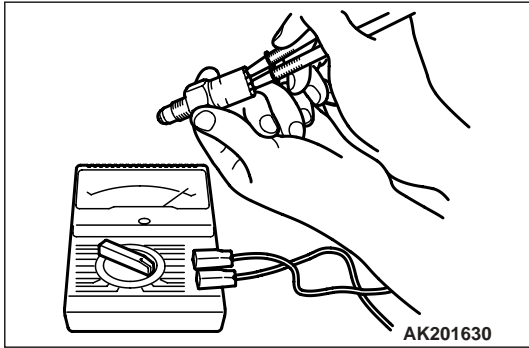


>>J<< O-RING INSTALLATION

Apply gear oil (Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4) to the O-ring.

INSPECTION

M1222001100071



BACKUP LIGHT SWITCH

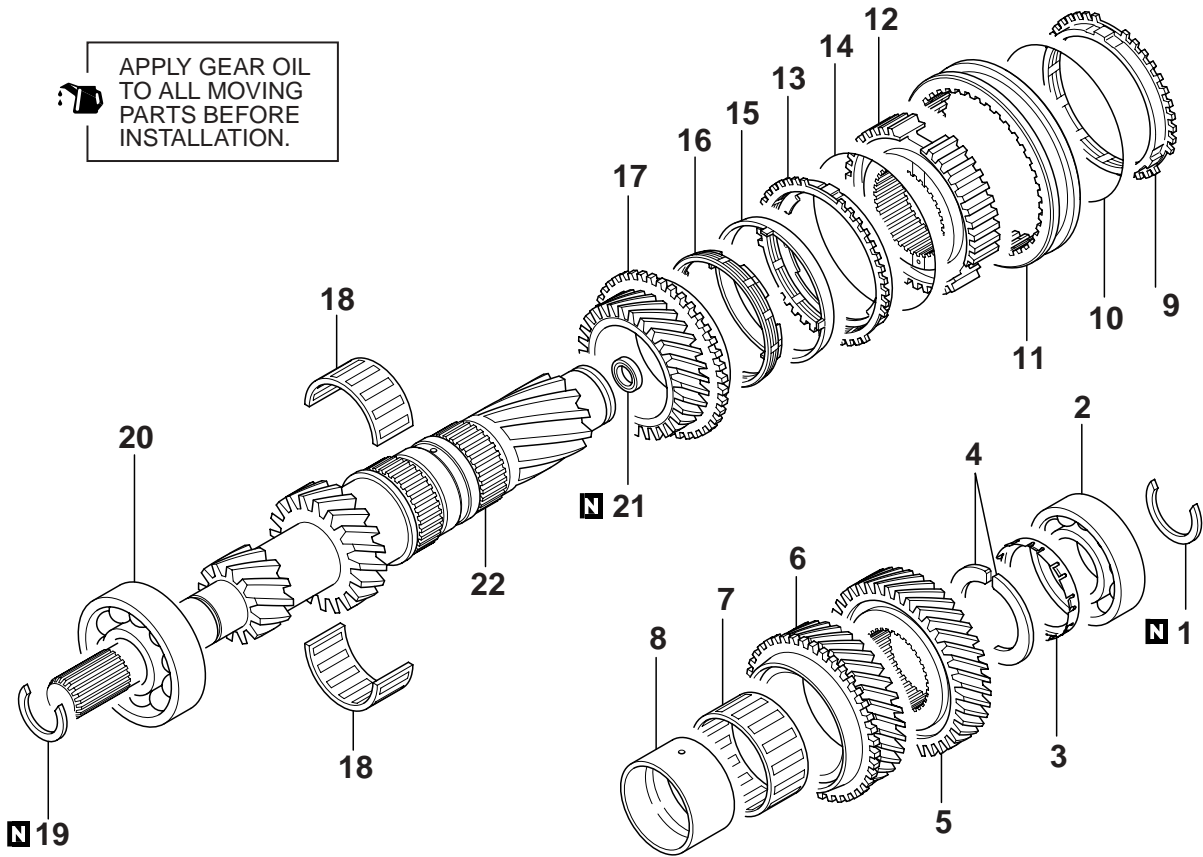
Check for continuity between terminals.

SWITCH CONDITION	CONTINUITY
Pressed	Open
Released	Conductive

INPUT SHAFT

DISASSEMBLY AND ASSEMBLY

M1222001600087



AKX00877AB

- DISASSEMBLY STEPS**
- >>L<< 1. SNAP RING
<<A>> >>K<< 2. BALL BEARING
<> >>J<< 3. THRUST PLATE STOPPER

- DISASSEMBLY STEPS**
- >>K<< 4. THRUST PLATE
<<C>> >>H<< 5. 5TH SPEED GEAR
6. 4TH SPEED GEAR

DISASSEMBLY STEPS

- <<D>> >>G<< 7. NEEDLE ROLLER BEARING
>>D<< 8. 4TH SPEED GEAR SLEEVE
>>F<< 9. SYNCHRONIZER RING
>>E<< 10. SYNCHRONIZER SPRING
11. SYNCHRONIZER SLEEVE
12. 3RD-4TH SPEED
SYNCHRONIZER HUB
13. OUTER SYNCHRONIZER RING
>>D<< 14. SYNCHRONIZER SPRING
15. SYNCHRONIZER CONE
16. INNER SYNCHRONIZER RING
17. 3RD SPEED GEAR
18. NEEDLE ROLLER BEARING
>>C<< 19. SNAP RING
<<E>> >>B<< 20. BALL BEAR
>>A<< 21. OIL SEAL
22. INPUT SHAFT

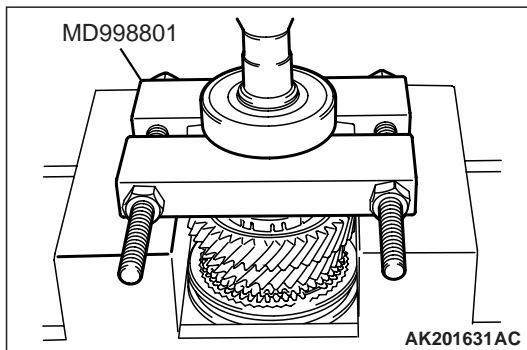
Required Special Tools:

- MD998801: Bearing Remover
- MD998812: Installer Cap
- MD998813: Installer-100
- MD998818: Installer Adapter (38)
- MD998825: Installer Adapter (52)

DISASSEMBLY SERVICE POINTS

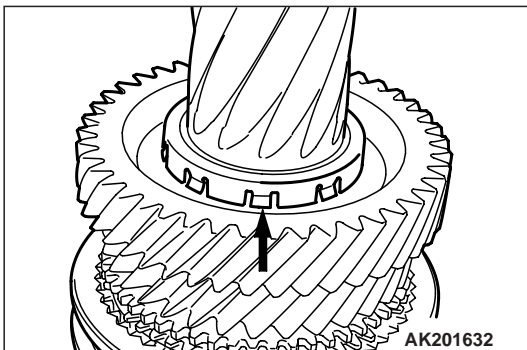
<<A>> BALL BEARING REMOVAL

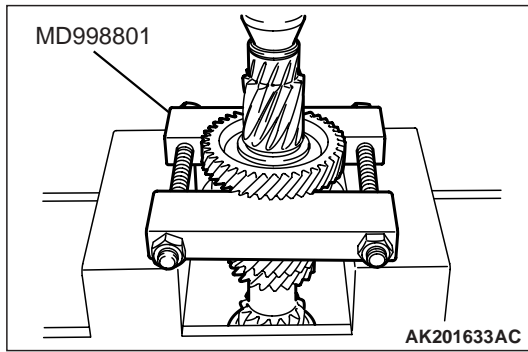
1. Using special tool MD998801, support the ball bearing, and then set them on the press.
2. Push down on the input shaft with the press and extract the ball bearing.



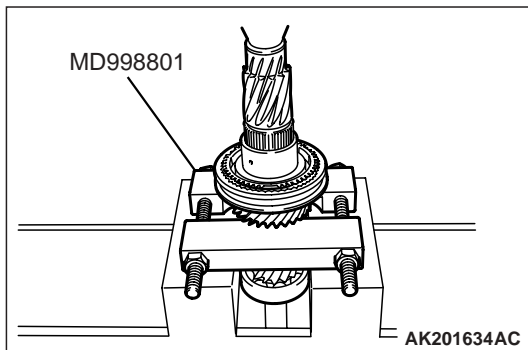
<> THRUST PLATE STOPPER REMOVAL

Using a screwdriver, pry up the position shown in the illustration and remove the thrust plate stopper.

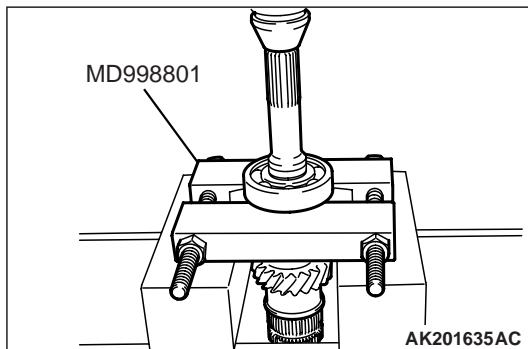


**<<C>>5TH SPEED GEAR REMOVAL**

1. Using special tool MD998801, support the 5th speed gear, and then set them on the press.
2. Push down on the input shaft with the press and take off the 5th speed gear.

**<<D>>4TH SPEED GEAR SLEEVE REMOVAL**

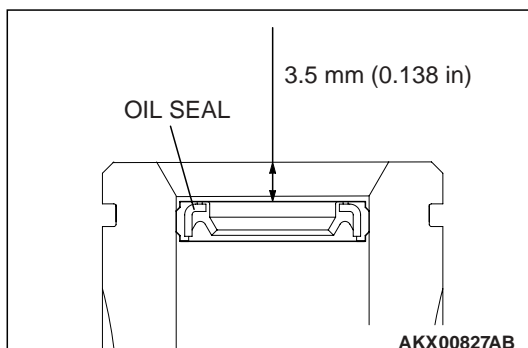
1. Using special tool MD998801, support the 3rd speed gear, and then set them on the press.
2. Push down on the input shaft with the press and remove the 4th speed gear sleeve.

**<<E>> BALL BEARING REMOVAL**

1. Using special tool MD998801, support the ball bearing, and then set them on the press.
2. Push down on the input shaft with the press and extract the ball bearing.

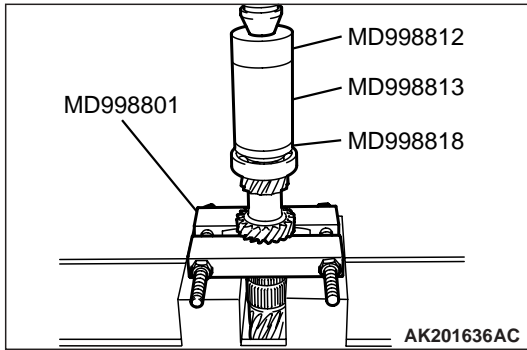
ASSEMBLY SERVICE POINTS**>>A<< OIL SEAL INSTALLATION**

Install the oil seal into the illustrated position of the input shaft.



>>B<< BALL BEARING INSTALLATION

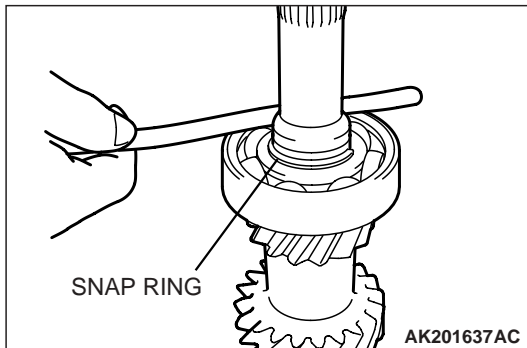
1. Using special tool MD998801, support the 2nd speed gear portion of the input shaft, and then set them on the press.
2. Using special tools MD998812, MD998813 and MD998818, press install the bearing with the press.



>>C<< SNAP RING INSTALLATION

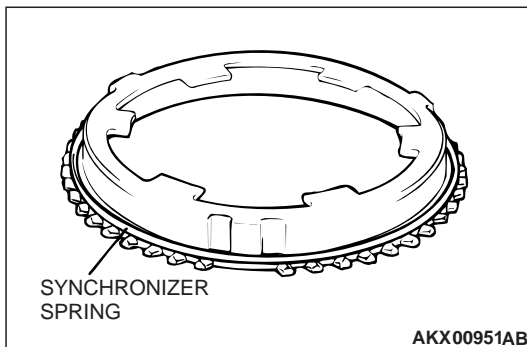
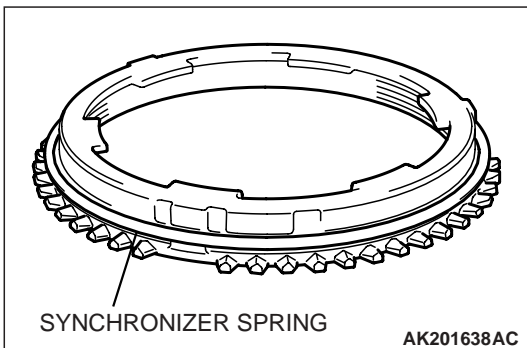
1. Install the thickest snap ring that can be fitted in the snap ring groove of input shaft.
2. Make sure that the ball bearing end play meets the standard value.

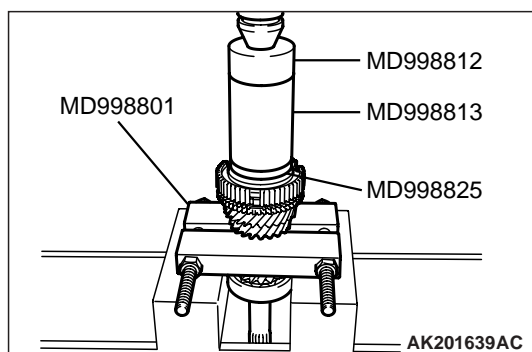
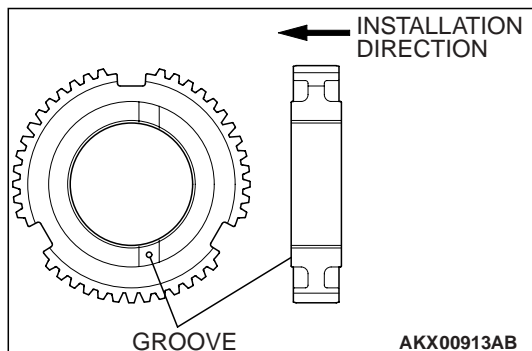
Standard value: 0 – 0.12 mm (0 – 0.0047 inch)



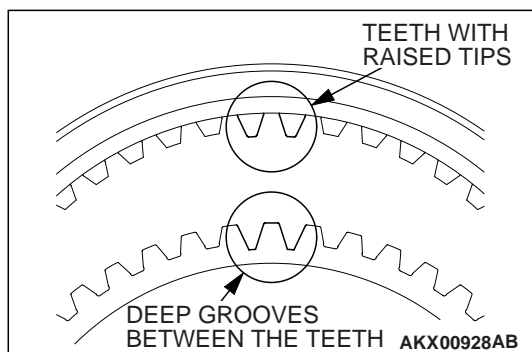
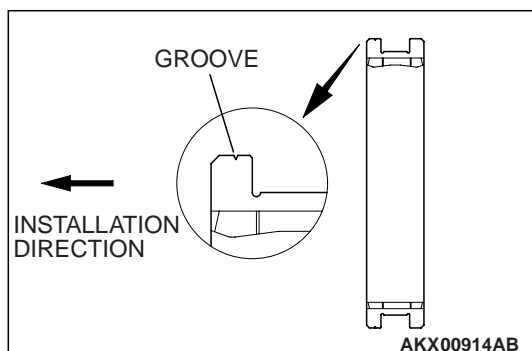
>>D<< SYNCHRONIZER SPRING INSTALLATION

Install the synchronizer spring to the illustrated position of the synchronizer ring and outer synchronizer ring.



**>>E<< 3RD-4TH SPEED SYNCHRONIZER HUB
INSTALLATION**

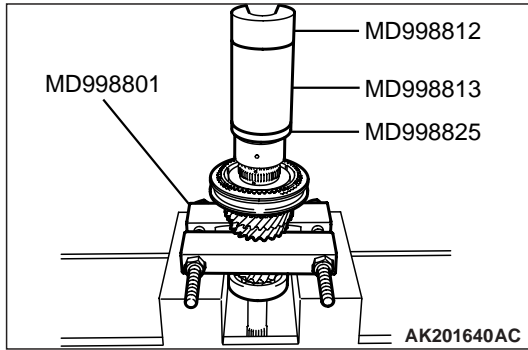
1. Using special tool MD998801, support the 2nd speed gear portion of the input shaft, and then set them on the press.
2. Make sure that the inner synchronizer ring has been perfectly matched to the 3rd speed gear cone.
3. Check the installation direction of the 3rd-4th speed synchronizer hub, and put it on the input shaft.
4. Using special tools MD998812, MD998813 and MD998825, press install the 3rd-4th speed synchronizer hub with the press.
5. Make sure that the outer synchronizer ring can rotate freely.

**>>F<< SYNCHRONIZER SLEEVE INSTALLATION**

1. Check the installation direction of the synchronizer sleeve, and install it onto the 3rd-4th speed synchronizer hub.
2. Install the synchronizer sleeve so that the areas with teeth that have raised tips (three areas total) are aligned with the areas on the synchronizer hub that have deep grooves between the teeth (three areas total).

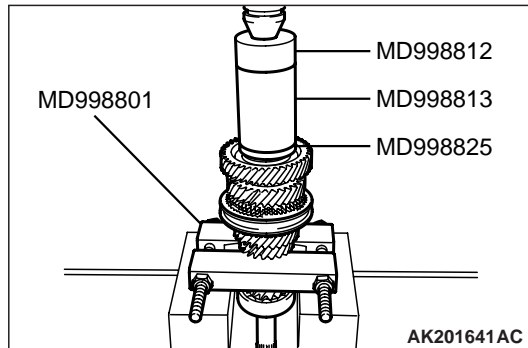
>>G<< 4TH SPEED GEAR SLEEVE INSTALLATION

1. Using special tool MD998801, support the 2nd speed gear portion of the input shaft, and then set them on the press.
2. Using special tools MD998812, MD998813 and MD998825, press install the 4th speed gear sleeve with the press.



>>H<< 5TH SPEED GEAR INSTALLATION

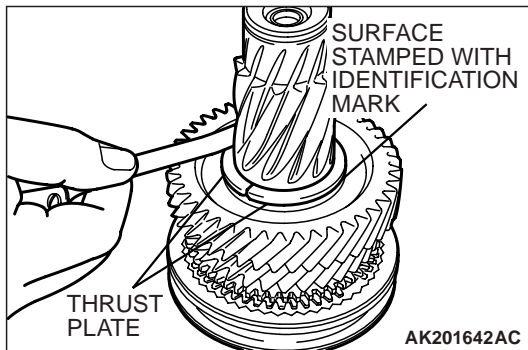
1. Using special tool MD998801, support the 2nd speed gear portion of the input shaft, and then set them on the press.
2. Using special tools MD998812, MD998813 and MD998825, press install the 5th speed gear in the input shaft.



>>I<< THRUST PLATE INSTALLATION

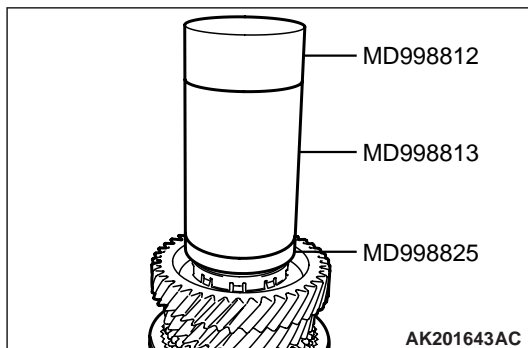
1. Install the thickest thrust plates that can be fitted in the groove of input shaft. Install the thrust plate so the surface stamped with the identification mark is facing up.
2. Make sure that the 5th speed gear end play meets the standard value.

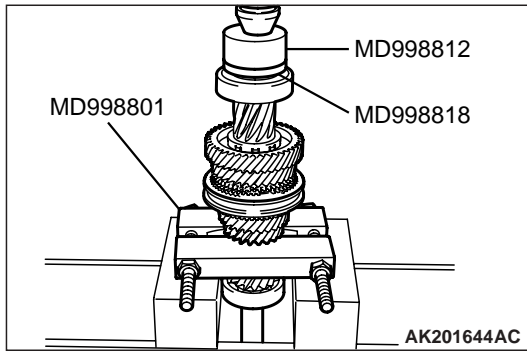
Standard value: 0 – 0.09 mm (0 – 0.0035 inch)



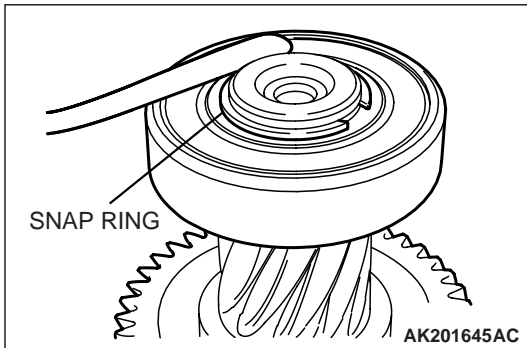
>>J<< THRUST PLATE STOPPER INSTALLATION

Install the thrust plate stopper by pressing special tools MD998812, MD998813 and MD998825 by hand. Make sure that it is not tilted.



**>>K<< BALL BEARING INSTALLATION**

1. Using special tool MD998801, support the 2nd speed gear portion of the input shaft, and then set them on the press.
2. Using special tools MD998812 and MD998818, press install the ball bearing in the input shaft.

**>>L<< SNAP RING INSTALLATION**

1. Install the thickest snap ring that can be fitted in the groove of input shaft.
2. Make sure that the ball bearing end play meet the standard value.

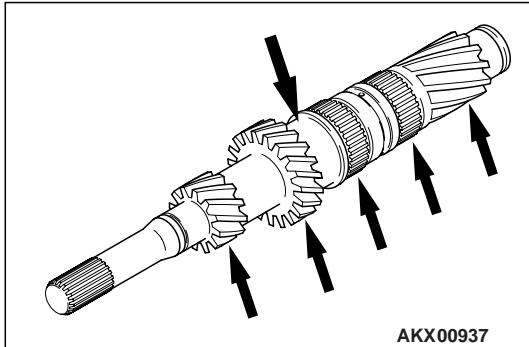
Standard value: 0 – 0.12 mm (0 – 0.0047 inch)

INSPECTION

M1222001700062

INPUT SHAFT

1. Check the outside diameter of the needle bearing mounting portion for damage, abnormal wear and seizure.
2. Check the splines for damage and wear.
3. Check that the helical gear teeth surfaces are not damaged or worn.

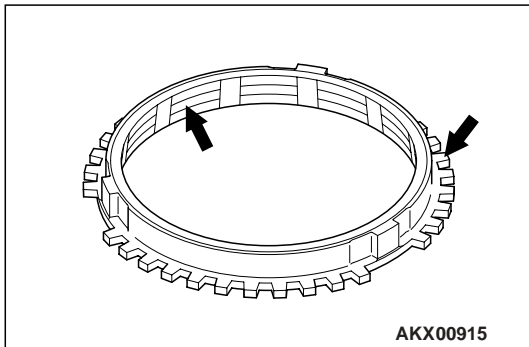


NEEDLE ROLLER BEARING

1. Combine the needle roller bearing with the input shaft or bearing sleeve and gear, and check that it rotates smoothly without noise or play.
2. Check the needle roller bearing cage for deformation.

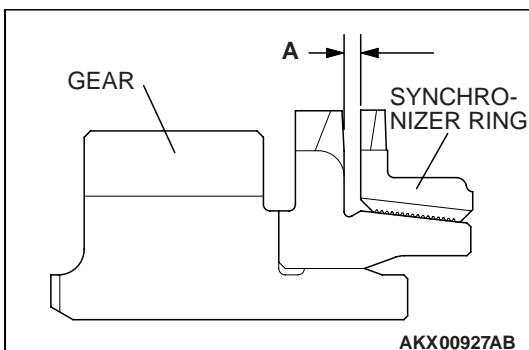
SYNCHRONIZER RING

1. Check the clutch gear teeth for damage and broken.
2. Check internal surface for damage, wear and broken threads.



3. Force the synchronizer ring toward the clutch gear and check clearance "A". If "A" is less than the limit, replace.

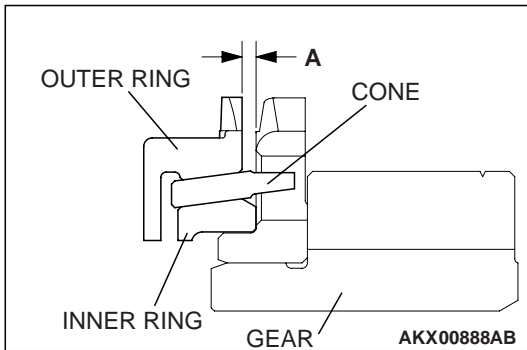
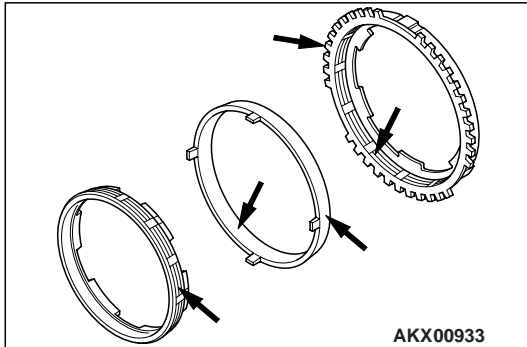
Minimum limit: 0.5 mm (0.020 inch)



OUTER SYNCHRONIZER RING/INNER SYNCHRONIZER RING/SYNCHRONIZER CONE**⚠ CAUTION**

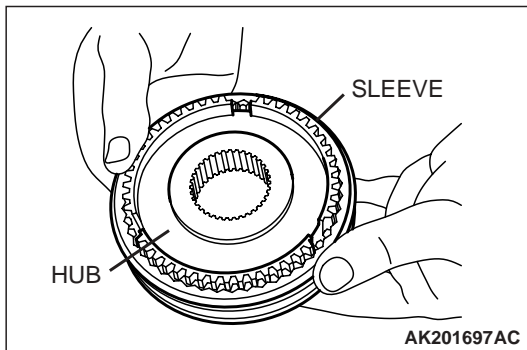
When any of the outer ring, inner ring or cone has to be replaced, replace them as a set.

1. Check to ensure that the clutch gear tooth surface and cone surface are not damaged and broken.



2. Install the outer ring, inner ring and cone, press them against the gear, and check clearance "A." If "A" is less than the limit, replace.

Minimum limit: 0.5 mm (0.020 inch)

**SYNCHRONIZER SLEEVE AND HUB**

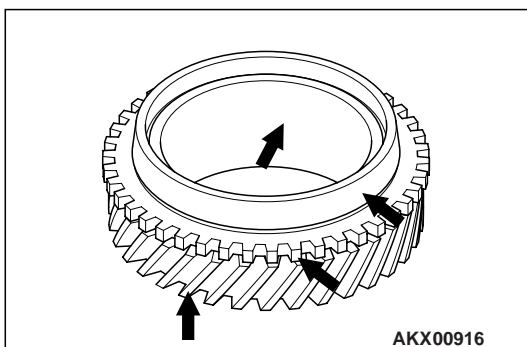
1. Combine the synchronizer sleeve and hub, and check that they slide smoothly.
2. Check that the sleeve is free from damage at its inside splines ends.

SYNCHRONIZER SPRING

Check that the spring is not sagging, deformed or broken.

SPEED GEARS

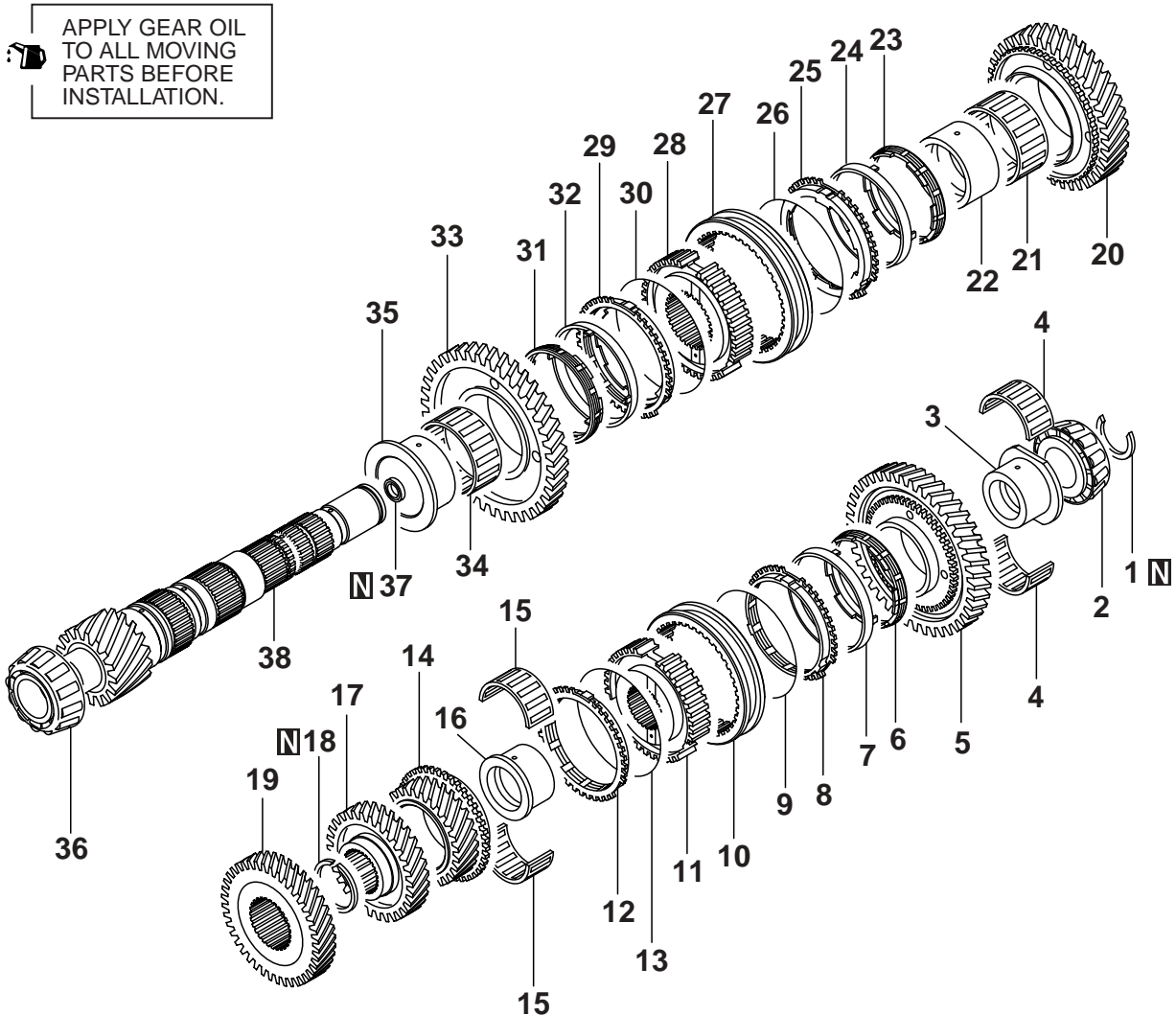
1. Check that the helical and clutch gear tooth surfaces are not damaged or worn.
2. Check that the synchronizer cone surfaces are not roughened, damaged or worn.
3. Check that the gear inside diameter and front and rear surfaces are not damaged and worn.



OUTPUT SHAFT

DISASSEMBLY AND ASSEMBLY

M1222002200082



AK203133AC

DISASSEMBLY STEPS

- | | |
|-------|--|
| >>P<< | 1. SNAP RING |
| <<A>> | >>O<< 2. TAPER ROLLER BEARING |
| <> | >>N<< 3. REVERSE GEAR BEARING SLEEVE |
| | 4. NEEDLE ROLLER BEARING |
| | 5. REVERSE GEAR |
| | 6. INNER SYNCHRONIZER RING |
| | 7. SYNCHRONIZER CONE |
| | 8. OUTER SYNCHRONIZER RING |
| >>L<< | 9. SYNCHRONIZER SPRING |
| >>F<< | 10. SYNCHRONIZER SLEEVE |
| <<C>> | >>M<< 11. 5TH SPEED-REVERSE SYNCHRONIZER HUB |
| | 12. SYNCHRONIZER RING |
| >>L<< | 13. SYNCHRONIZER SPRING |
| | 14. 5TH SPEED GEAR |
| >>K<< | 15. NEEDLE ROLLER BEARING |
| | 16. 5TH SPEED GEAR SLEEVE |

DISASSEMBLY STEPS

- | | |
|-------|------------------------------------|
| >>J<< | 17. 4TH SPEED GEAR |
| >>I<< | 18. SNAP RING |
| <<D>> | >>H<< 19. 3RD SPEED GEAR |
| | 20. 2ND SPEED GEAR |
| | 21. NEEDLE ROLLER BEARING |
| <<E>> | >>G<< 22. 2ND SPEED GEAR SLEEVE |
| | 23. INNER SYNCHRONIZER RING |
| | 24. SYNCHRONIZER CONE |
| | 25. OUTER SYNCHRONIZER RING |
| >>D<< | 26. SYNCHRONIZER SPRING |
| >>F<< | 27. SYNCHRONIZER SLEEVE |
| >>E<< | 28. 1ST-2ND SPEED SYNCHRONIZER HUB |
| | 29. OUTER SYNCHRONIZER RING |
| >>D<< | 30. SYNCHRONIZER SPRING |
| | 31. INNER SYNCHRONIZER RING |
| | 32. SYNCHRONIZER CONE |
| | 33. 1ST SPEED GEAR |
| | 34. NEEDLE ROLLER BEARING |

DISASSEMBLY STEPS

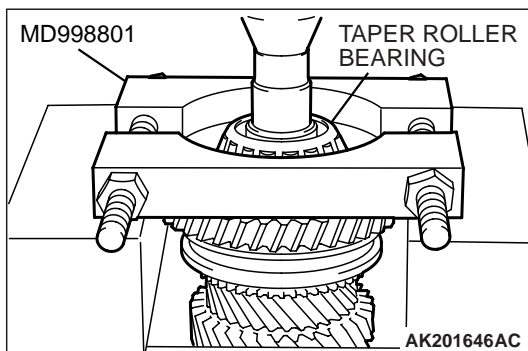
- <<F>> >>C<< 35. 1ST SPEED GEAR SLEEVE
 <<G>> >>B<< 36. TAPER ROLLER BEARING
 >>A<< 37. OIL SEAL
 38. OUTPUT SHAFT

Required Special Tools:

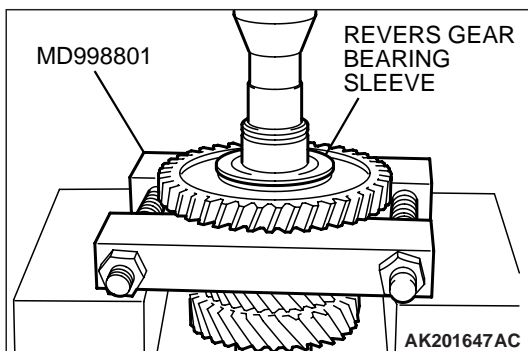
- MD998364: Camshaft Oil Seal Installer
- MD998801: Bearing Remover
- MD998812: Installer Cap
- MD998814: Installer – 200
- MD998819: Installer Adapter (40)
- MD998820: Installer Adapter (42)
- MD998821: Installer Adapter (44)
- MD998824: Installer Adapter (50)
- MD998917: Bearing Remover

DISASSEMBLY SERVICE POINTS**<<A>> TAPER ROLLER BEARING REMOVAL**

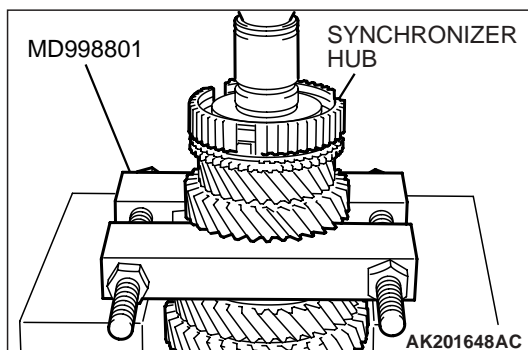
1. Using special tool MD998801, support the taper roller bearing, and then set them on the press.
2. Push down on the output shaft with the press, and take out the taper roller bearing.

**<> REVERSE GEAR BEARING SLEEVE REMOVAL**

1. Using special tool MD998801, support the reverse gear, and then set them on the press.
2. Push down on the output shaft with the press and remove the reverse gear bearing sleeve.

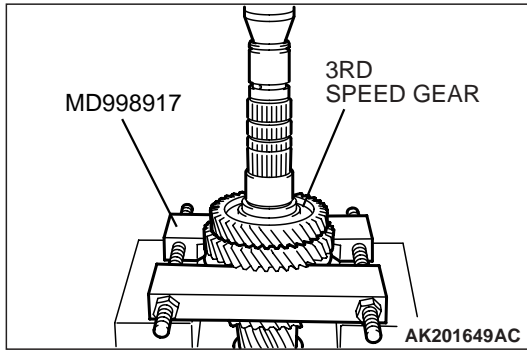
**<<C>> 5TH SPEED-REVERSE SYNCHRONIZER HUB REMOVAL**

1. Using special tool MD998801, support the 4th speed gear, and then set them on the press.
2. Push down on the output shaft with the press and remove the 5th speed-reverse synchronizer hub.



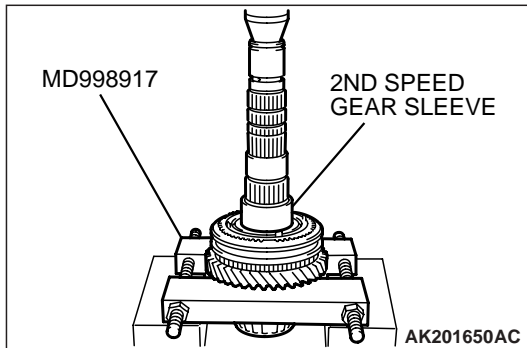
<<D>> 3RD SPEED GEAR REMOVAL

1. Using special tool MD998917, support the 2nd speed gear, and then set them on the press.
2. Push down on the output shaft with the press and remove the 3rd speed gear.



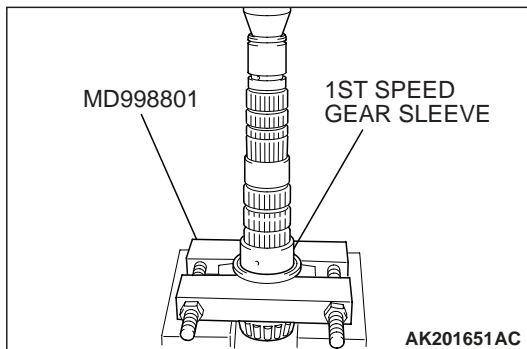
<<E>> 2ND SPEED GEAR SLEEVE REMOVAL

1. Using special tool MD998917, support the 1st speed gear, and then set them on the press.
2. Push down on the output shaft with the press and remove the 2nd speed gear sleeve.



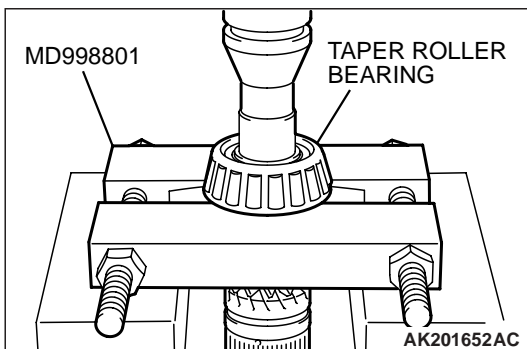
<<F>> 1ST SPEED GEAR SLEEVE REMOVAL

1. Using special tool MD998801, support the 1st speed gear sleeve, and then set them on the press.
2. Push down on the output shaft with the press and remove the 1st speed gear sleeve.



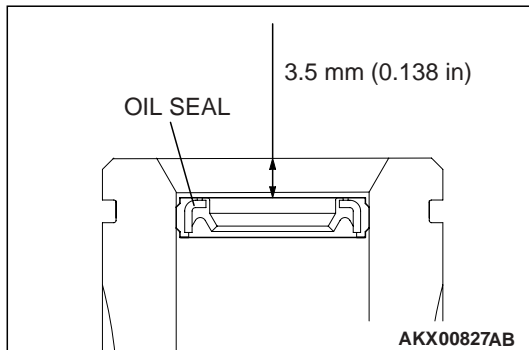
<<G>> TAPER ROLLER BEARING REMOVAL

1. Using special tool MD998801, support the taper roller bearing, and then set them on the press.
2. Push down on the output shaft with the press and remove the taper roller bearing.

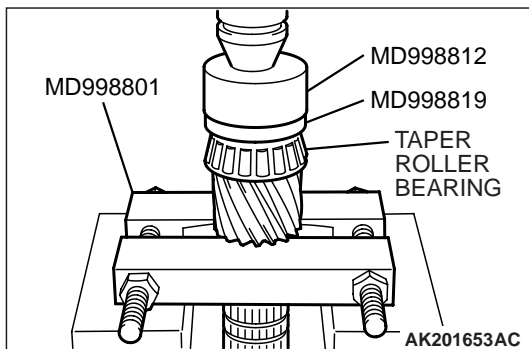


ASSEMBLY SERVICE POINTS**>>A<< OIL SEAL INSTALLATION**

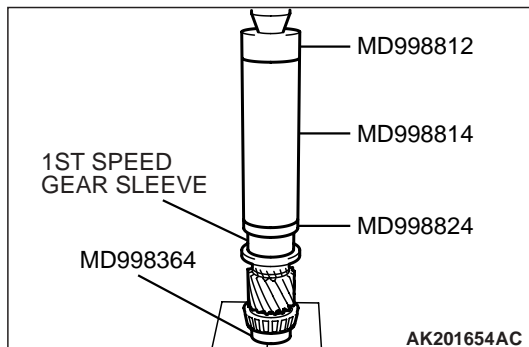
Make sure that the oil seal is pressed into the position shown in the illustration.

**>>B<< TAPER ROLLER BEARING INSTALLATION**

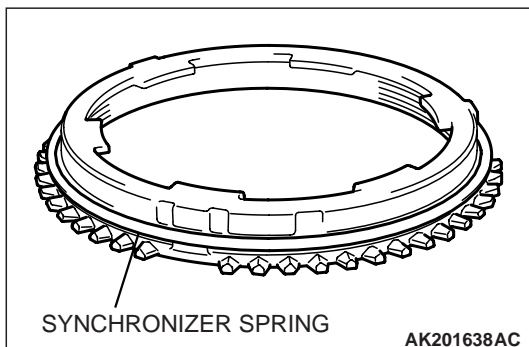
1. Using special tool MD998801, support the output shaft gear, and then set them on the press.
2. Using special tools MD998812 and MD998819, press install the taper roller bearing with the press.

**>>C<< 1ST SPEED GEAR SLEEVE INSTALLATION**

1. Set the output shaft on the press support stand.
2. Using special tools MD998812, MD998814, MD998824 and MD998364, press install the 1st speed gear sleeve with the press.

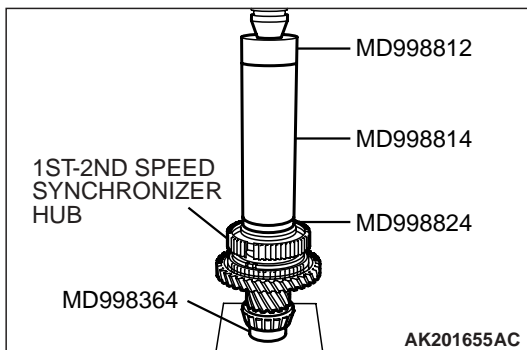
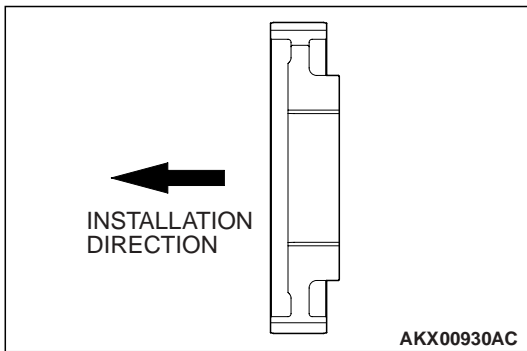
**>>D<< SYNCHRONIZER SPRING INSTALLATION**

Install the synchronizer spring to the illustrated position of the outer synchronizer ring.



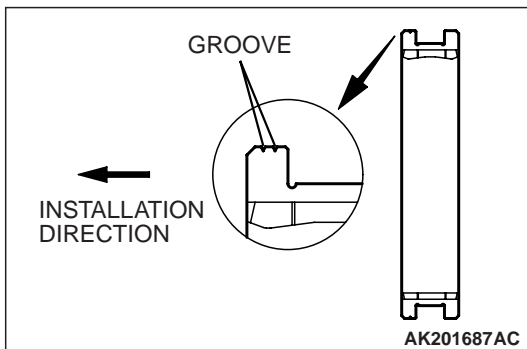
**>>E<< 1ST-2ND SPEED SYNCHRONIZER HUB
INSTALLATION**

1. Set the output shaft on the press support stand.
2. Check that the 1st-2nd speed synchronizer hub is in the correct installation direction, and put it on the output shaft.
3. Using special tools MD998812, MD998814, MD998824 and MD998364, press install the 1st-2nd speed synchronizer hub with the press.
4. Make sure that the outer synchronizer ring on the 1st speed gear side can rotate freely.

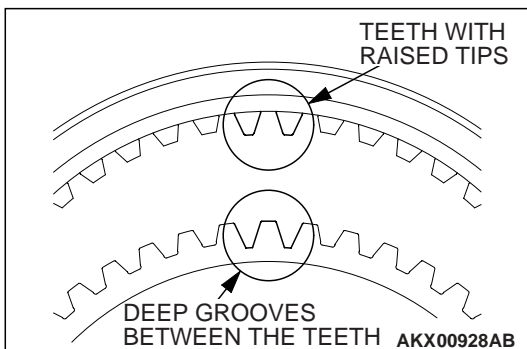


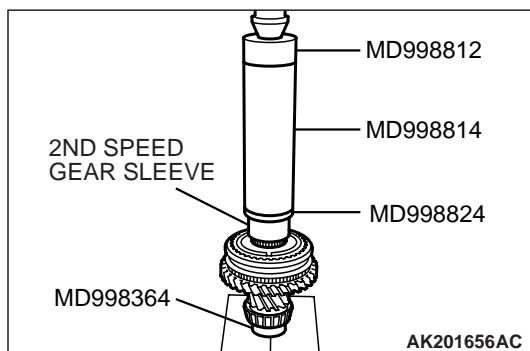
>>F<< SYNCHRONIZER SLEEVE INSTALLATION

1. Check that the synchronizer sleeve is in the correct direction for installation, and install it on the 1st-2nd speed synchronizer hub.

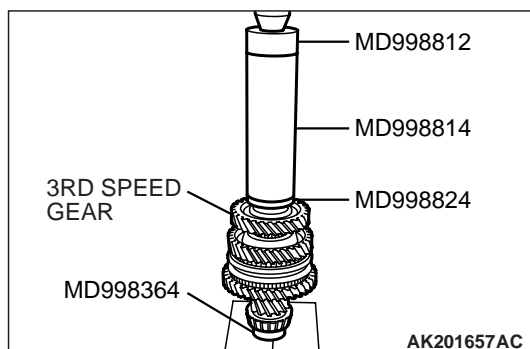


2. Install the synchronizer sleeve so that the areas with teeth that have raised tips (three areas total) are aligned with the areas on the synchronizer hub that have deep grooves between the teeth (three areas total).

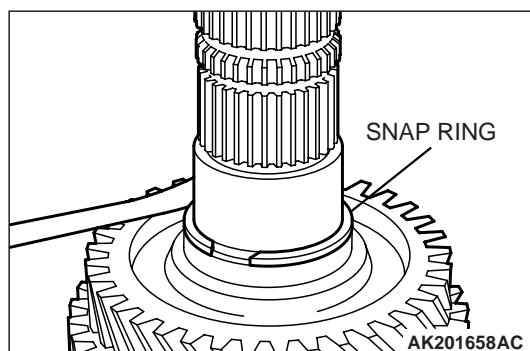


**>>G<< 2ND SPEED GEAR SLEEVE INSTALLATION**

1. Set the output shaft on the press support stand.
2. Using special tools MD998812, MD998813, MD998824 and MD998364, press install the 2nd speed sleeve onto the output shaft.

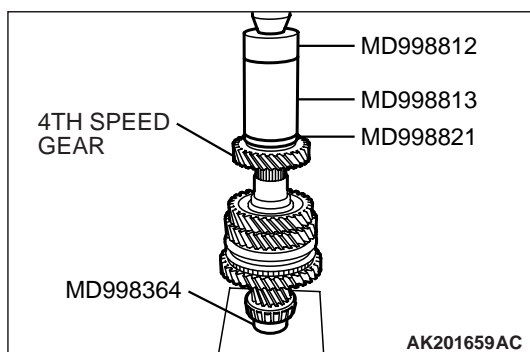
**>>H<< 3RD SPEED GEAR INSTALLATION**

1. Check that the 2nd speed gear and the outer synchronizer ring have been properly installed. Also, make sure the claws on the synchronizer cone (four places) are correctly fitted into the holes in the 2nd speed gear (four places).
2. Using special tools MD998812, MD998814, MD998824 and MD998364, press install the 3rd speed gear onto the output shaft.
3. Make sure that the 2nd speed gear and the outer synchronizer ring can rotate freely.

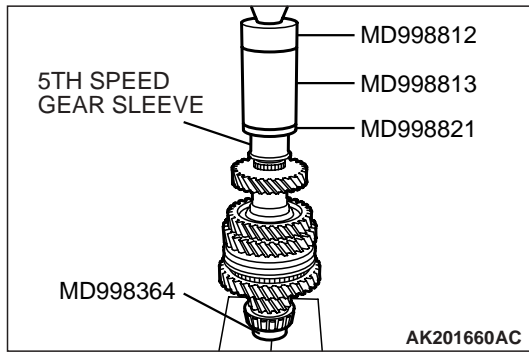
**>>I<< SNAP RING INSTALLATION**

1. Install the thickest snap ring that can be fitted in the groove of output shaft.
2. Make sure that the 3rd speed gear end play meets the standard value.

Standard value: 0 – 0.09 mm (0 – 0.0035 inch)

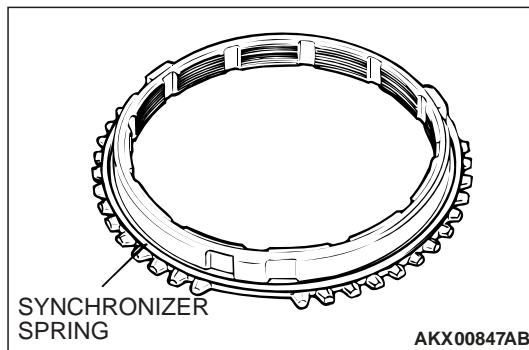
**>>J<< 4TH SPEED GEAR INSTALLATION**

1. Set the output shaft on the press support stand.
2. Using special tools MD998812, MD998813, MD998821 and MD998364, press install the 4th speed gear onto the output shaft.



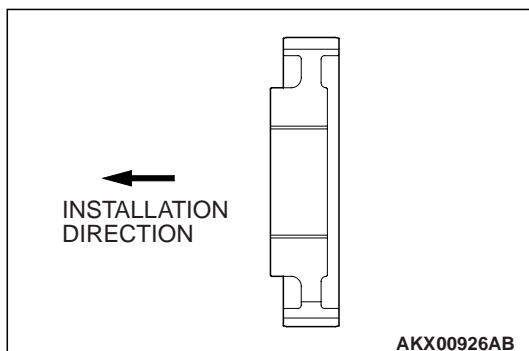
>>K<< 5TH SPEED GEAR SLEEVE INSTALLATION

Using special tools MD998812, MD998813, MD998821 and MD998364, press install the 5th speed gear sleeve onto the output shaft.



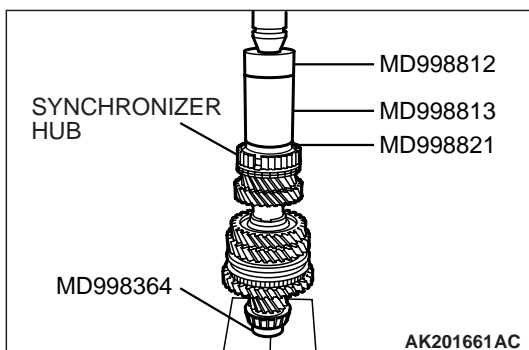
>>L<< SYNCHRONIZER SPRING INSTALLATION

Install the synchronizer spring to the illustrated position of the synchronizer ring.

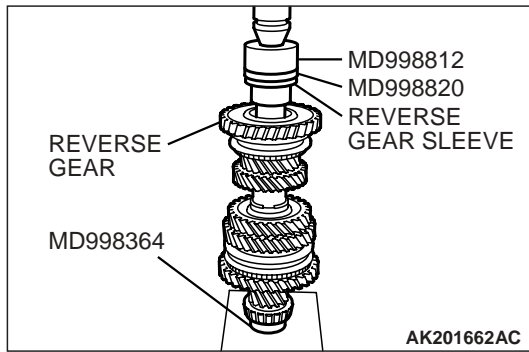


>>M<< 5TH SPEED-REVERSE SYNCHRONIZER HUB INSTALLATION

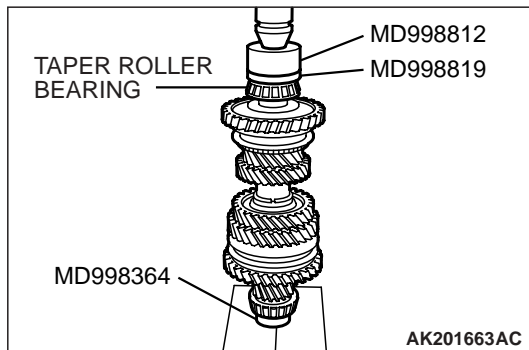
1. Set the output shaft on the press support stand.
2. Make sure that the synchronizer ring is fitted correctly on the cone of the 5th speed gear.
3. Check that the 5th speed-reverse synchronizer hub is oriented correctly for installation, and fit it on the output shaft.



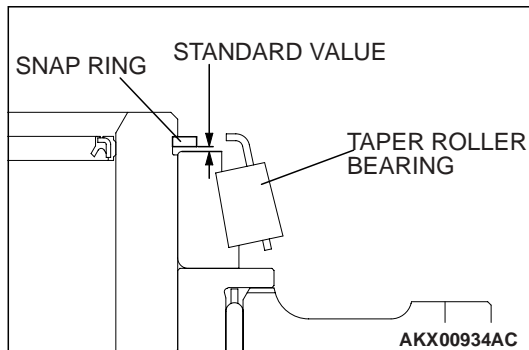
4. Using special tools MD998812, MD998813, MD998821 and MD998364, press install the 5th speed-reverse synchronizer hub with the press.
5. Make sure that the synchronizer ring on the 5th speed gear side can rotate freely.

**>>N<< REVERSE GEAR BEARING SLEEVE INSTALLATION**

1. Make sure the synchronizer ring, reverse gear and needle roller bearing have been correctly installed.
2. Using special tools MD998812, MD998820 and MD998364, press fit the reverse gear sleeve. Make sure that the reverse gear and the synchronizer ring can rotate freely during the pressing process.

**>>O<< TAPER ROLLER BEARING INSTALLATION**

Using special tools MD998812, MD998819 and MD998364, press install the taper roller bearing.

**>>P<< SNAP RING INSTALLATION**

1. Install the thickest snap ring that can be fitted in the groove of output shaft.
2. Make sure that the taper roller bearing end play meets the standard value.

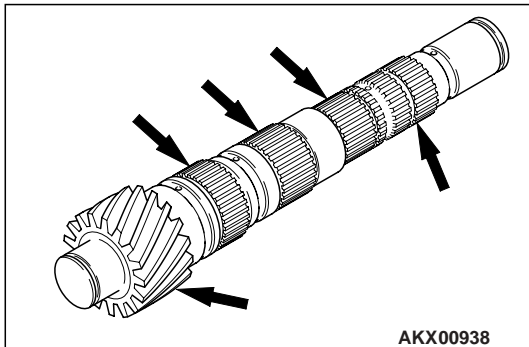
Standard value: 0 – 0.09 mm (0 – 0.0035 inch)

INSPECTION

M1222002300067

OUTPUT SHAFT

1. Check the splines for damage and wear.
2. Check that the helical gear teeth surfaces are not damaged or worn.

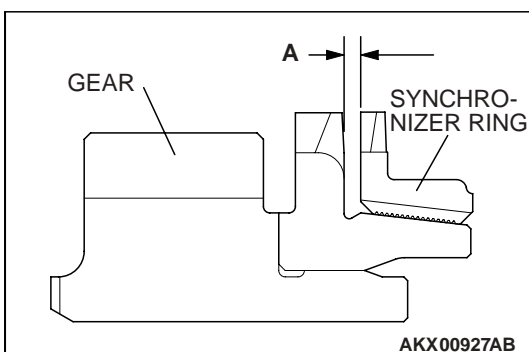
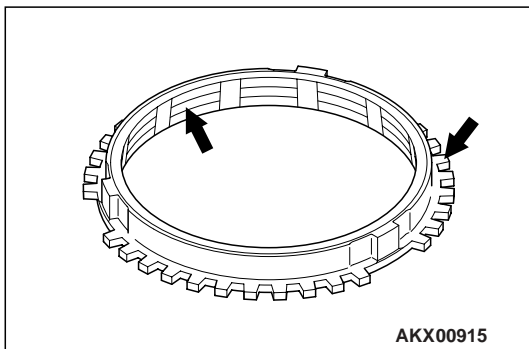


NEEDLE ROLLER BEARING

1. Combine the needle roller bearing with the bearing sleeve and gear, and check that it rotates smoothly without noise or play.
2. Check the needle roller bearing cage for deformation.

SYNCHRONIZER RING <FOR 5TH SPEED>

1. Check if the clutch gear teeth are damaged or broken.
2. Check internal surface for damage, wear and broken threads.



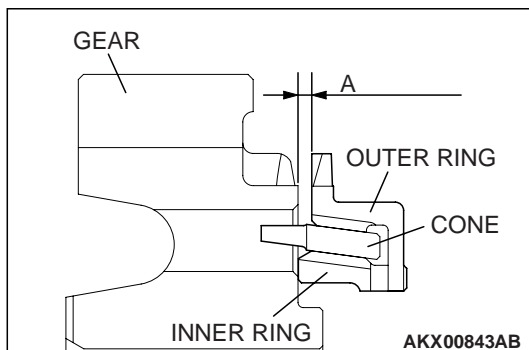
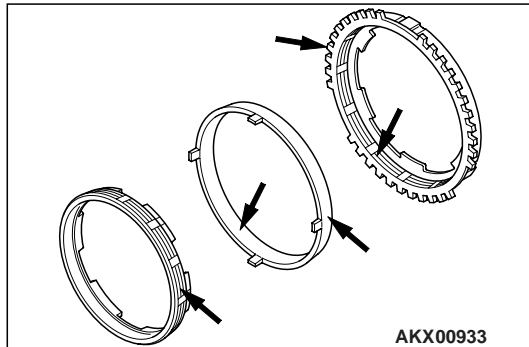
3. Force the synchronizer ring toward the clutch gear and check clearance "A". If "A" is less than the limit, replace the synchronizer ring.

Minimum limit: 0.5 mm (0.020 inch)

OUTER SYNCHRONIZER RING/INNER SYNCHRONIZER RING/SYNCHRONIZER CONE <FOR REVERSE>**⚠ CAUTION**

When replacing, replace the outer ring, inner ring and cone as a set.

1. Check that the clutch gear tooth surfaces and cone surfaces are not damaged or broken.



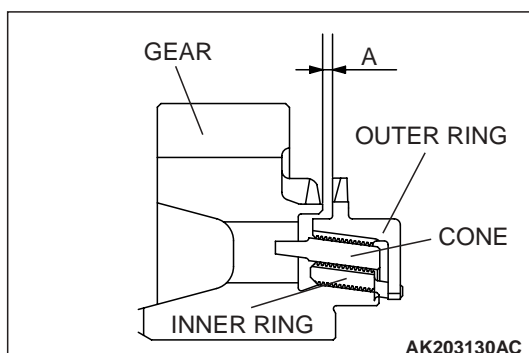
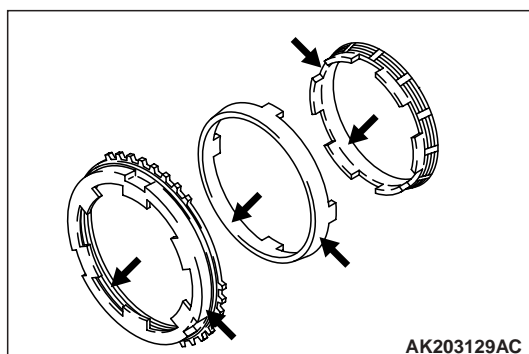
2. Install the outer ring, inner ring and cone, force them toward the gear, and check clearance "A". If "A" is less than the limit, replace them as a set.

Minimum limit: 0.5 mm (0.020 inch)

OUTER SYNCHRONIZER RING/INNER SYNCHRONIZER RING/SYNCHRONIZER CONE <FOR 1 ST SPEED AND 2 ND SPEED>**⚠ CAUTION**

When replacing, replace the outer ring, inner ring and cone as a set.

1. Check that the clutch gear tooth surfaces and cone surfaces are not damaged or broken.

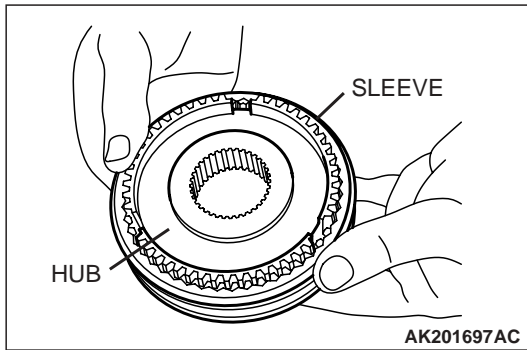


2. Install the outer ring, inner ring and cone, force them toward the gear, and check clearance "A". If "A" is less than the limit, replace them as a set.

Minimum limit: 0.5 mm (0.020 inch)

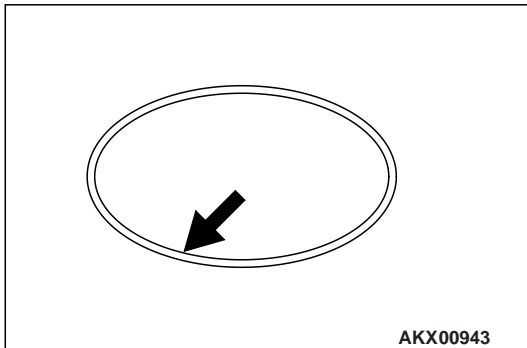
SYNCHRONIZER SLEEVE AND HUB

1. Combine the synchronizer sleeve and hub, and check that they slide smoothly.
2. Check that the sleeve is free from damage at its inside splines ends.



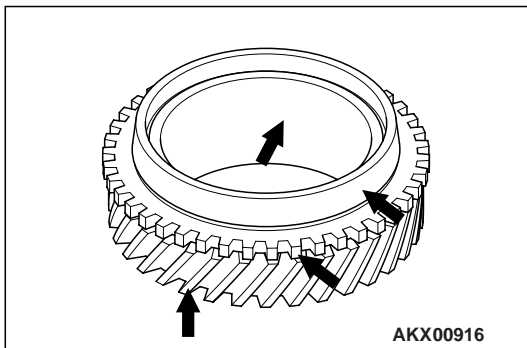
SYNCHRONIZER SPRING

Check that the spring is not sagging, deformed or broken.



SPEED GEARS

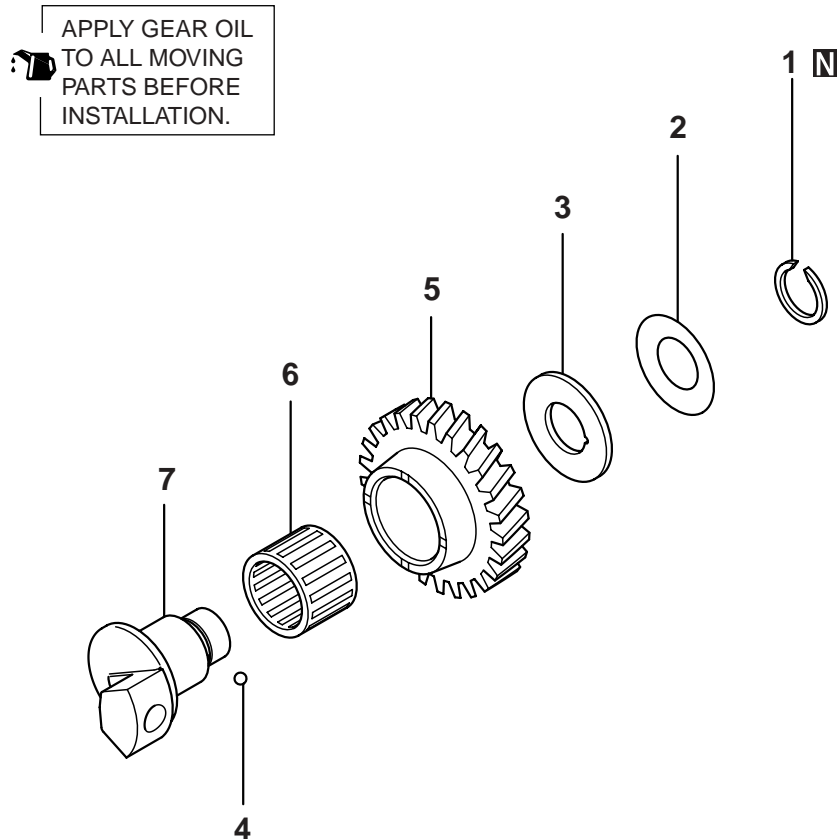
1. Check that the helical and clutch gear tooth surfaces are not damaged or worn.
2. Check that the synchronizer cone surfaces are not roughened, damaged or worn.
3. Check that the gear inside diameter and front and rear surfaces are not damaged and worn.



REVERSE IDLER GEAR

DISASSEMBLY AND ASSEMBLY

M1222012500062



AK000202AB

DISASSEMBLY STEPS

1. SNAP RING
2. CONE SPRING
3. THRUST WASHER
4. STEEL BALL

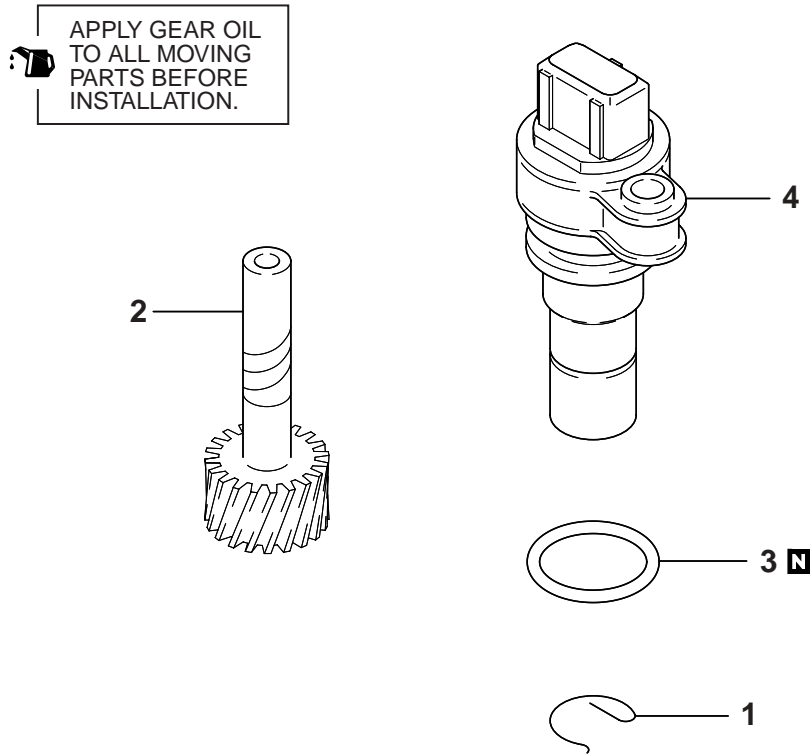
DISASSEMBLY STEPS

5. REVERSE IDLER GEAR
6. NEEDLE ROLLER BEARING
7. REVERSE IDLER GEAR SHAFT

SPEEDOMETER GEAR

DISASSEMBLY AND ASSEMBLY

M1222003400056



AKX00804AB

DISASSEMBLY STEPS

1. E-CLIP
2. SPEEDOMETER DRIVEN GEAR

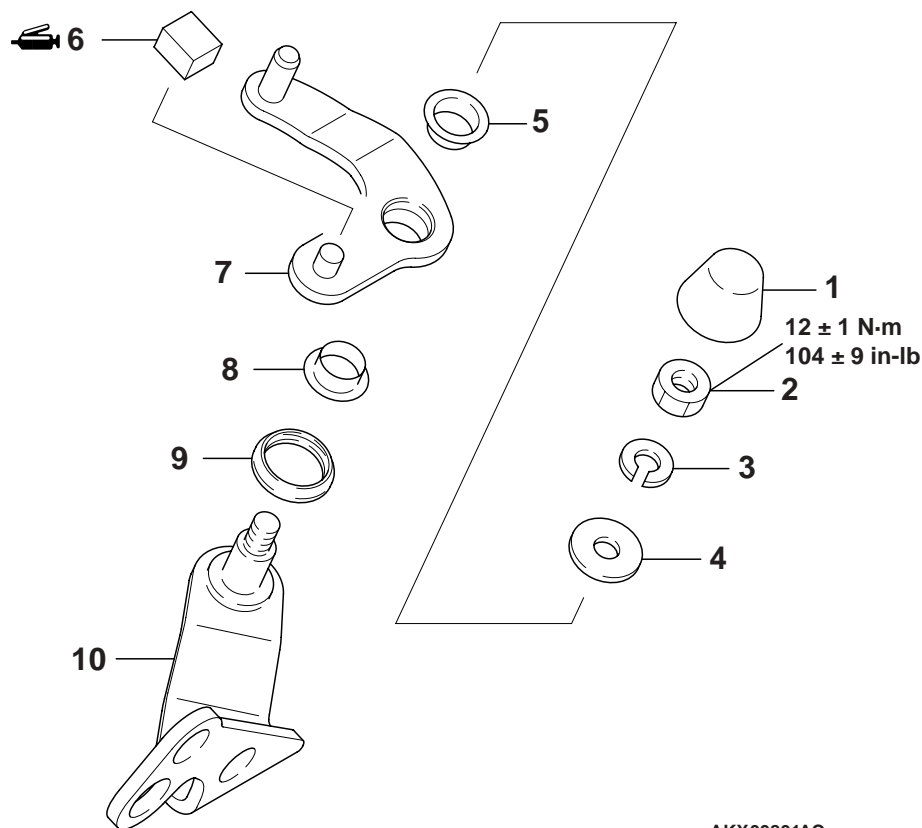
DISASSEMBLY STEPS

3. O-RING
4. SLEEVE

SELECT LEVER

DISASSEMBLY AND ASSEMBLY

M1222012800052



AKX00801AC

DISASSEMBLY STEPS

1. DUST COVER
2. NUT
3. SPRING WASHER
4. WASHER
- >>A<< 5. SELECT LEVER BUSHING

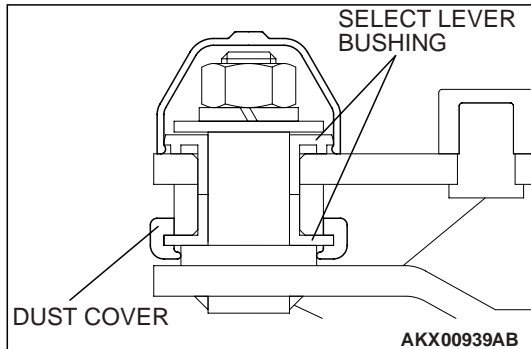
DISASSEMBLY STEPS

6. SELECT LEVER SHOE
7. SELECT LEVER
- >>A<< 8. SELECT LEVER BUSHING
- >>A<< 9. DUST COVER
10. SELECT LEVER SHAFT

ASSEMBLY SERVICE POINT

>>A<< DUST COVER AND SELECT LEVER BUSHING INSTALLATION

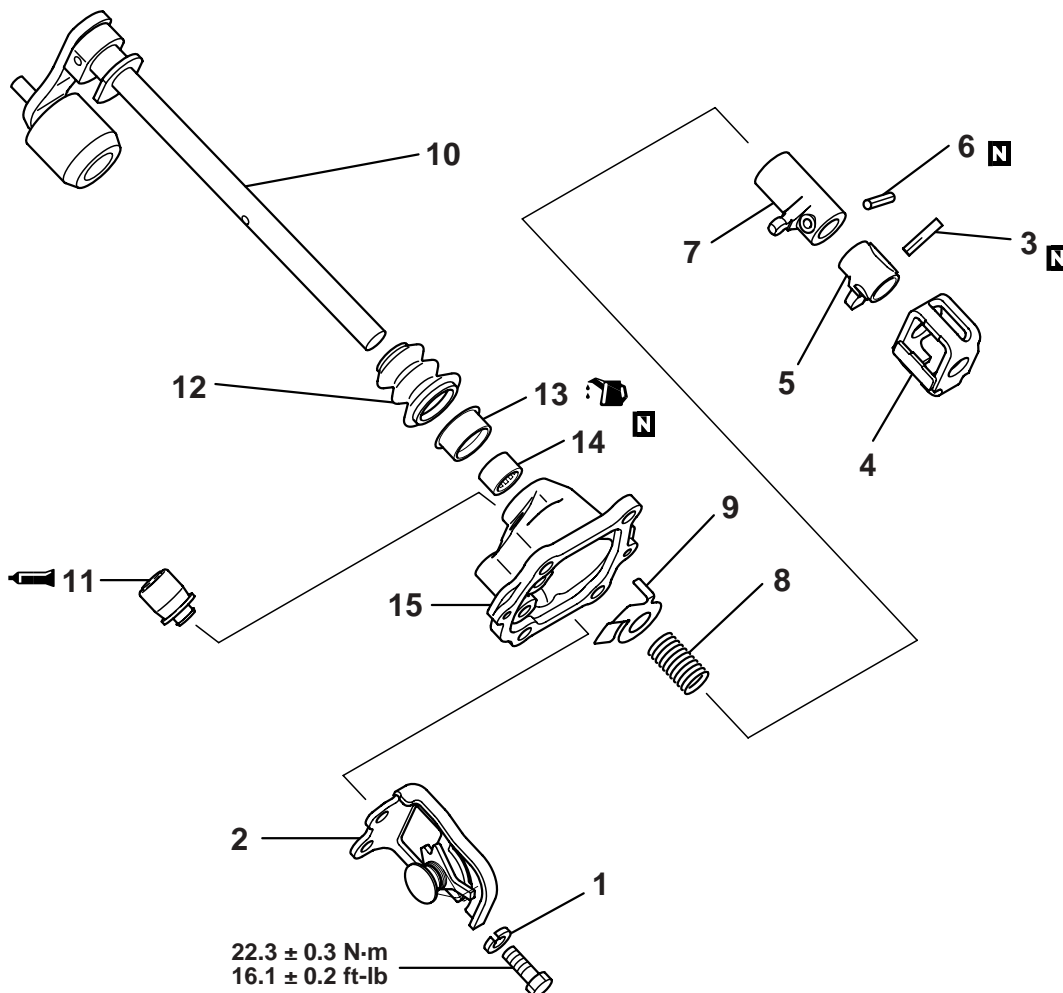
Use the figure to make sure the dust cover and select lever bushing installation direction is correct, and the distinguished parts are correctly assembled.



CONTROL HOUSING

DISASSEMBLY AND ASSEMBLY

M1222013100120



AK100967AC

DISASSEMBLY STEPS

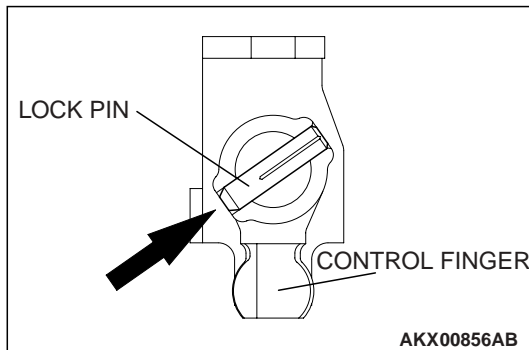
- <<A>> >>E<<
1. SPRING WASHER
 2. STOPPER BRACKET
 3. LOCK PIN
 4. INTERLOCK PLATE
 5. CONTROL FINGER
 - >>D<< 6. SPRING PIN
 7. STOPPER BODY
 8. SPRING

DISASSEMBLY STEPS (Continued)

9. SPACER
10. CONTROL SHAFT
- >>C<< 11. AIR BREATHER
12. CONTROL SHAFT BOOT
- >>B<< 13. OIL SEAL
- >>A<< 14. NEEDLE BEARING
15. CONTROL HOUSING

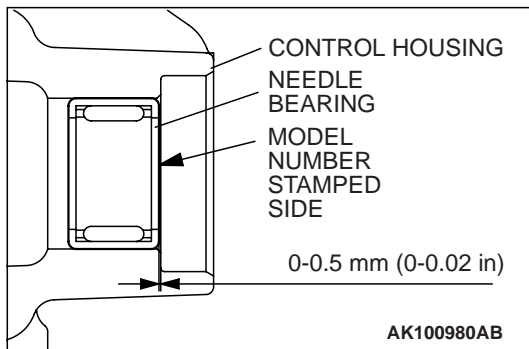
DISASSEMBLY SERVICE POINT**<<A>> LOCK PIN REMOVAL**

Drive out the lock pin from the direction shown.

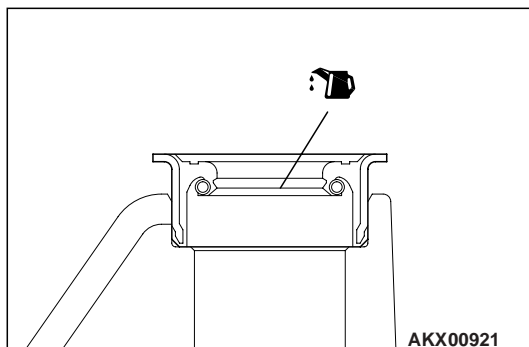
**ASSEMBLY SERVICE POINTS****>>A<< NEEDLE BEARING INSTALLATION**

Press fit the needle bearing into the control housing side as shown.

Make sure that the side with the model number stamped on it faces the end of the control housing as shown.

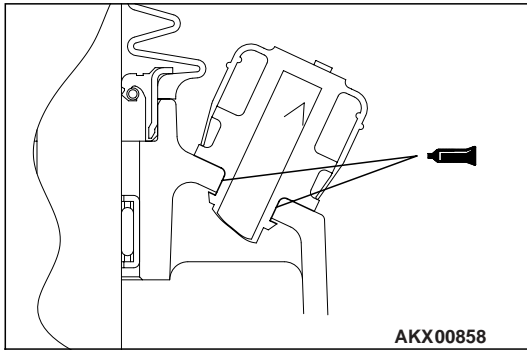
**>>B<< OIL SEAL INSTALLATION**

Apply gear oil (Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4) to the oil seal lip area.

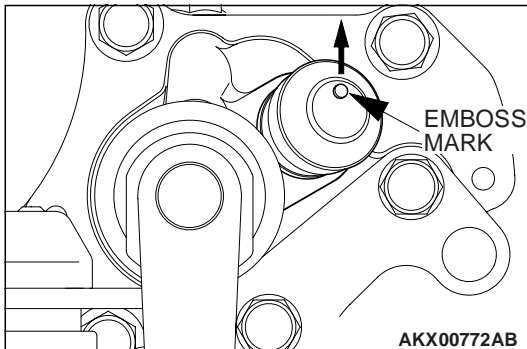


>>C<< AIR BREATHER INSTALLATION

1. Apply sealant (3M™ AAD Part Number 8001 or equivalent) to the inserting portion of air breather.

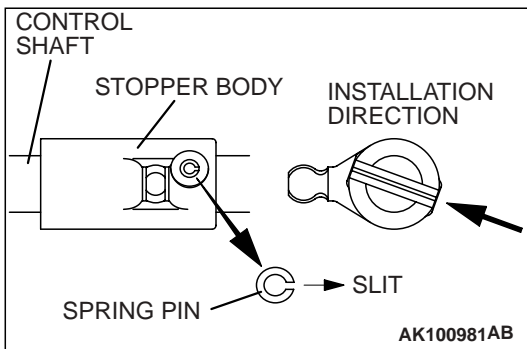


2. Install the air breather so that the embossed mark is in the direction shown in the figure.



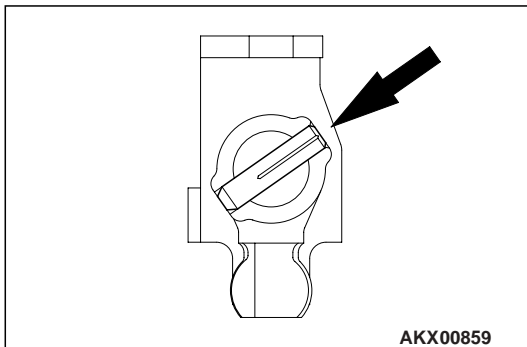
>>D<< SPRING PIN INSTALLATION

Drive in the spring pin so that the slit is in the direction shown in the figure.



>>E<< LOCK PIN INSTALLATION

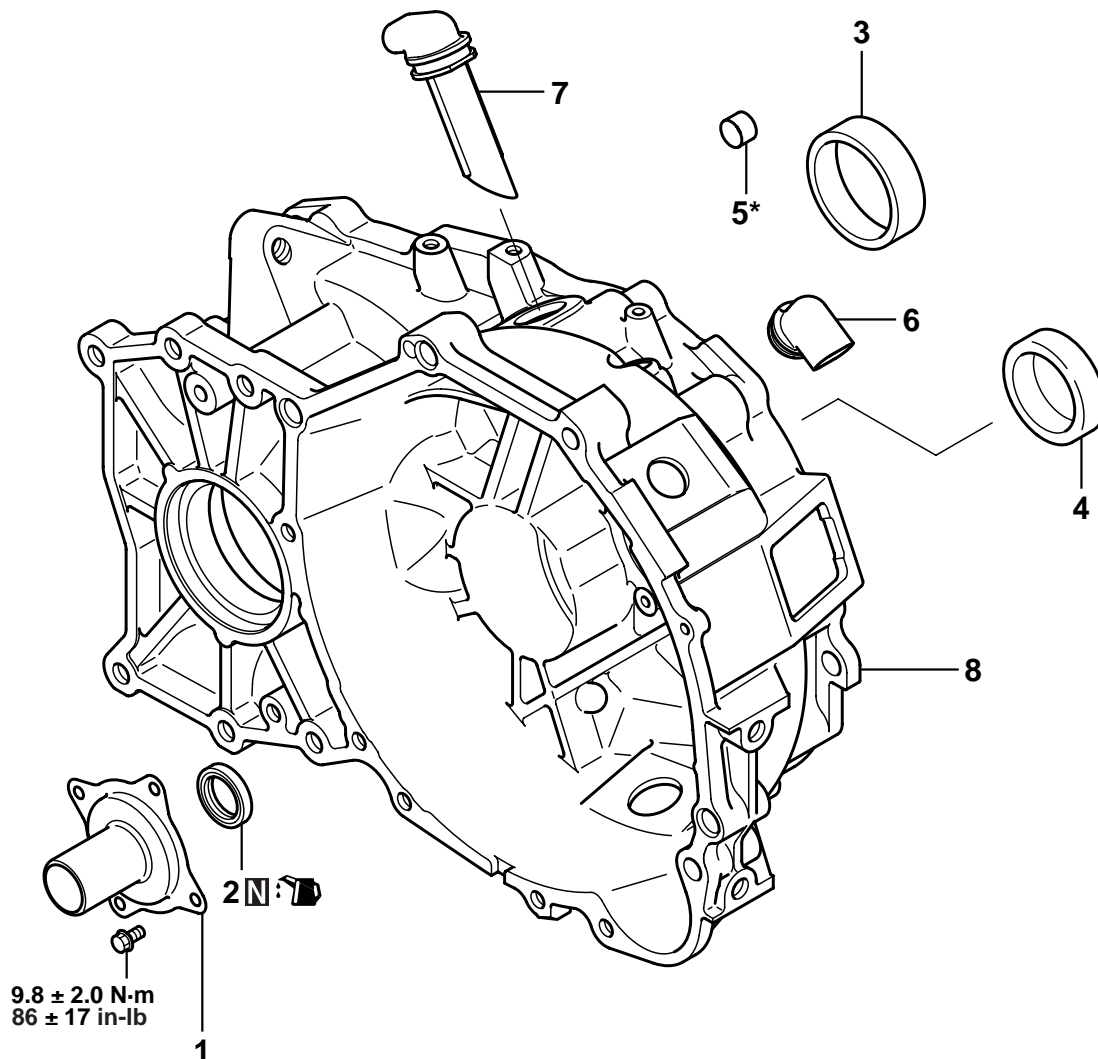
Drive the lock pin in from the direction shown in the figure.



CLUTCH HOUSING

DISASSEMBLY AND ASSEMBLY

M1222003700080



AK201683AC

DISASSEMBLY STEPS

1. CLUTCH RELEASE BEARING RETAINER
 >>E<< 2. OIL SEAL
 <<A>> >>D<< 3. OUTER RACE
 <> >>C<< 4. OUTER RACE
 >>B<< 5. BUSHING*

DISASSEMBLY STEPS

- >>A<< 6. COVER-A
 >>A<< 7. COVER-B
 8. CLUTCH HOUSING

NOTE: *:Refer to the needle bearing and bushing installation procedures only when replacing the transaxle case.

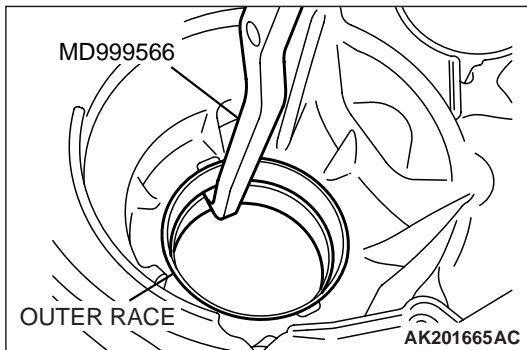
Required Special Tools:

- MB990928: Installer Adapter
- MB990935: Installer Adapter
- MB990938: Handle
- MB991445: Bushing Remover and Installer Base
- MD999566: Claw

DISASSEMBLY SERVICE POINT

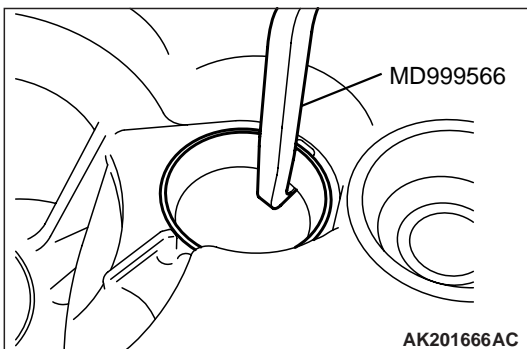
<<A>> OUTER RACE REMOVAL

Using special tool MD999566, remove the outer race from the clutch housing.



<> OUTER RACE REMOVAL

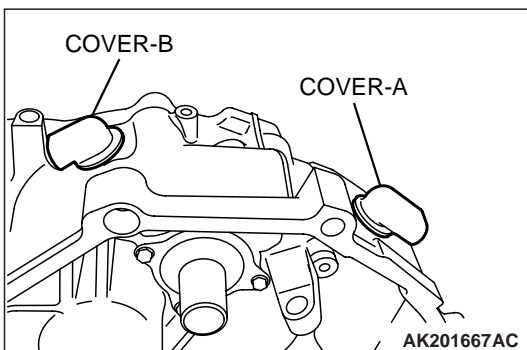
Using special tool MD999566, remove the outer race from the clutch housing.



ASSEMBLY SERVICE POINTS

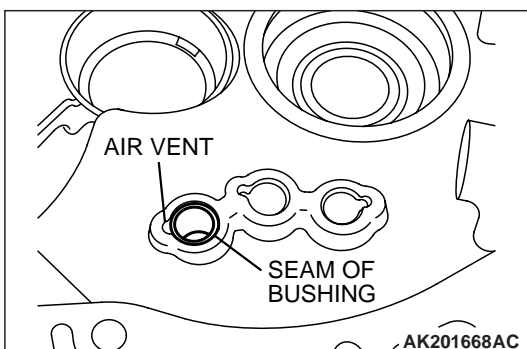
>>A<< COVER-B/COVER-A INSTALLATION

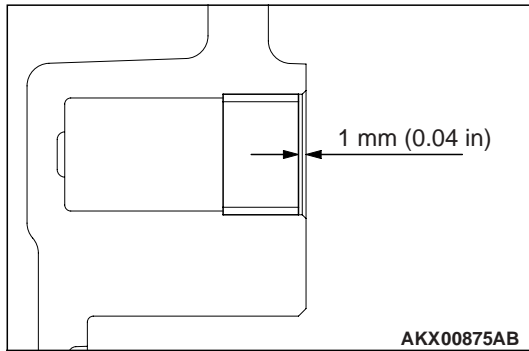
Install the covers directed as shown in the illustration.



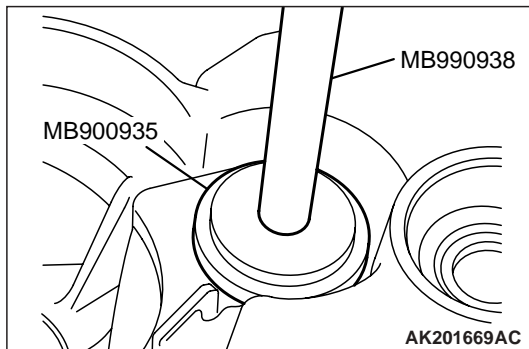
>>B<< BUSHING INSTALLATION

1. Press fit the bushing so the seam is away from the air vent.

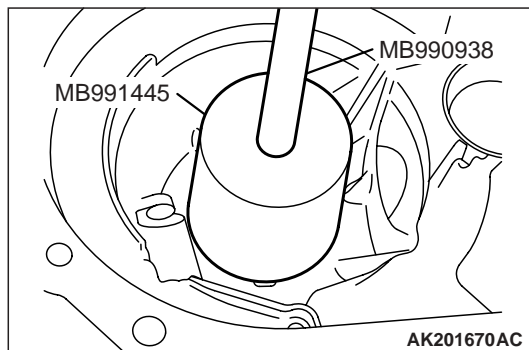




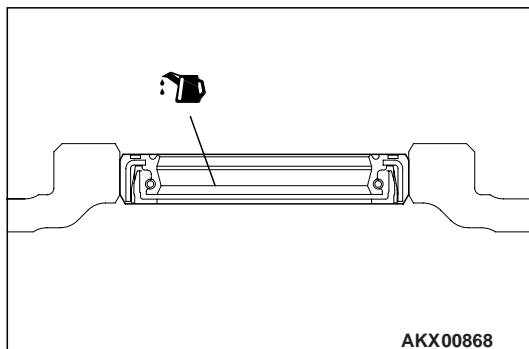
2. Be sure the bushing is fully seated as shown. It must be 1 mm (0.04 inch) below the housing surface.

**>>C<< OUTER RACE INSTALLATION**

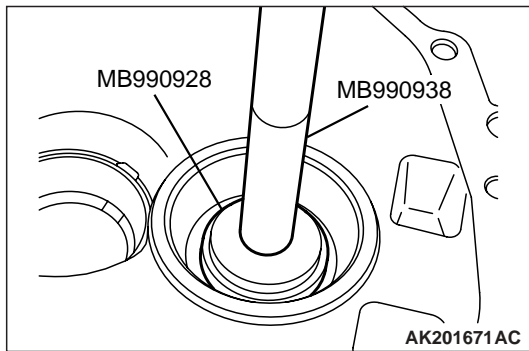
Using special tools MB990938 and MB990935, press fit the outer race into the clutch housing.

**>>D<< OUTER RACE INSTALLATION**

1. Check the installation direction of the outer race.
2. Using special tools MB990938 and MB991445, press fit the outer race into the clutch housing.

**>>E<< OIL SEAL INSTALLATION**

1. Apply transmission oil (Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4) to the oil seal lip.

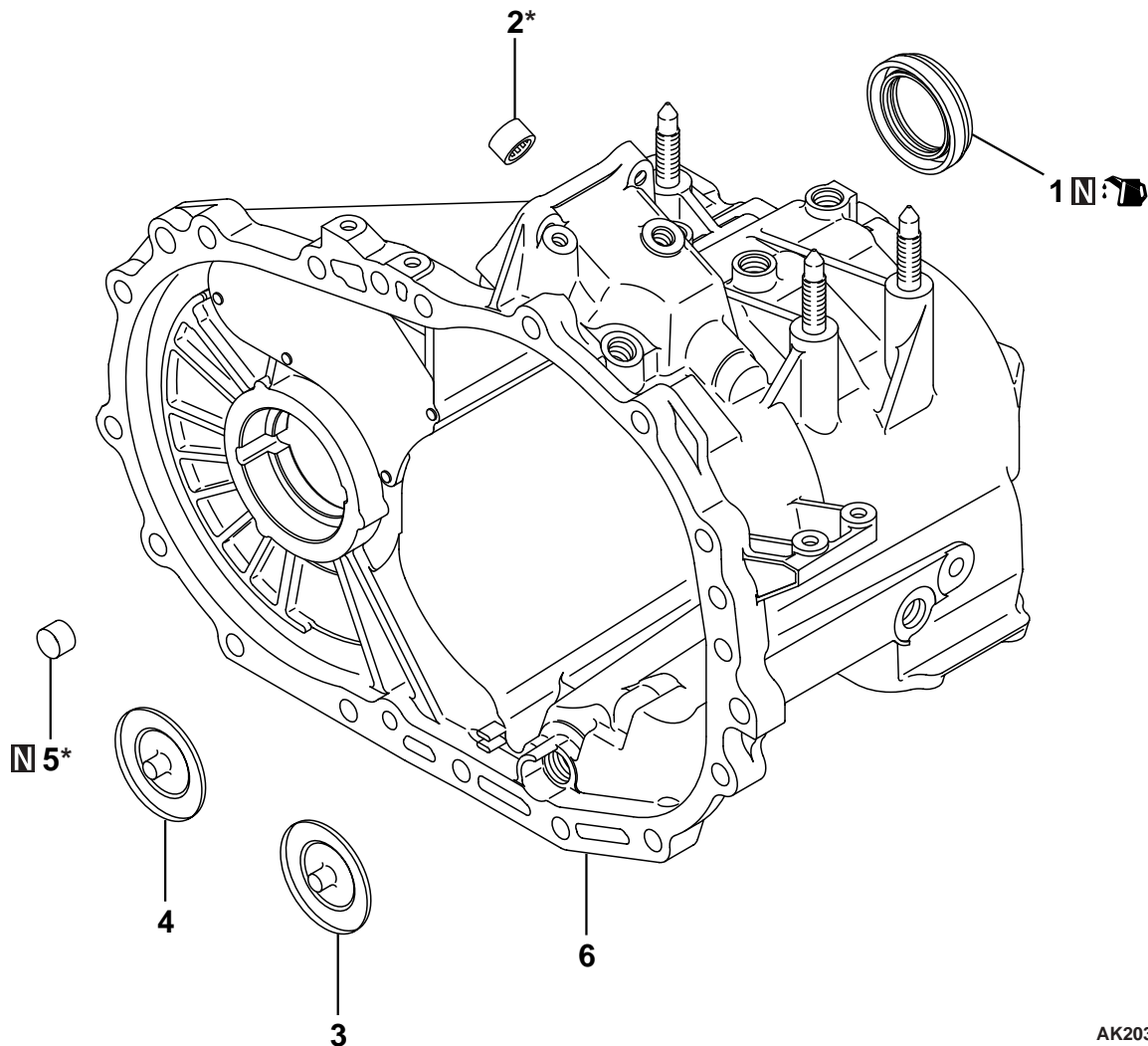


2. Using special tools MB990938 and MB990928, press fit the oil seal into the clutch housing.

TRANSMISSION CASE

DISASSEMBLY AND ASSEMBLY

M1222013400057



DISASSEMBLY STEPS

- >>C<< 1. OIL SEAL
>>B<< 2. NEEDLE BEARING*
3. OIL GUIDE
4. OIL GUIDE

DISASSEMBLY STEPS (Continued)

- >>A<< 5. BUSHING*
6. TRANSAXLE

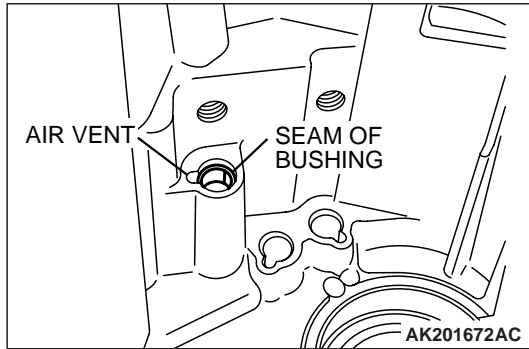
NOTE: *:Refer to the needle bearing and bushing installation procedures only when replacing the transaxle case.

Required Special Tools:

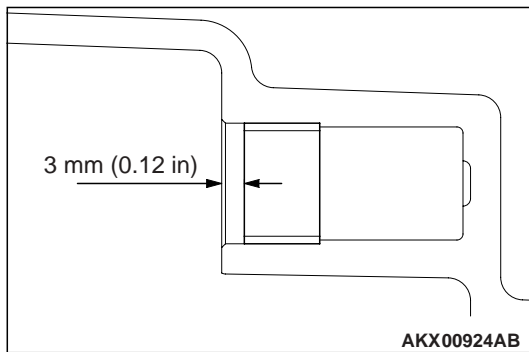
- MD998800: Differential Oil Seal Installer

ASSEMBLY SERVICE POINTS**>>A<< BUSHING INSTALLATION**

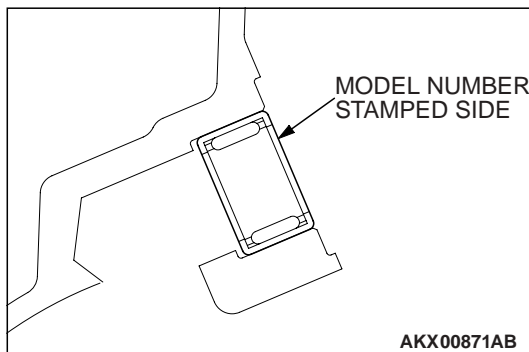
1. Press fit the bushing so the seam is away from the air vent.



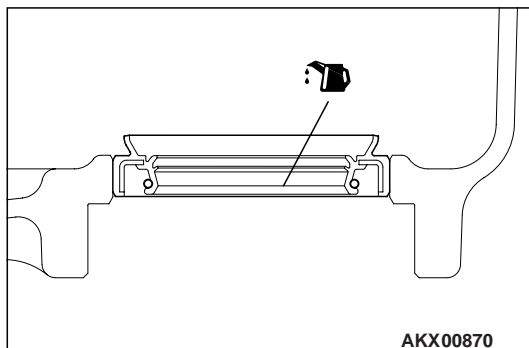
2. Be sure the bushing is fully seated as shown. It must be 3 mm (0.12 inch) below the housing surface.

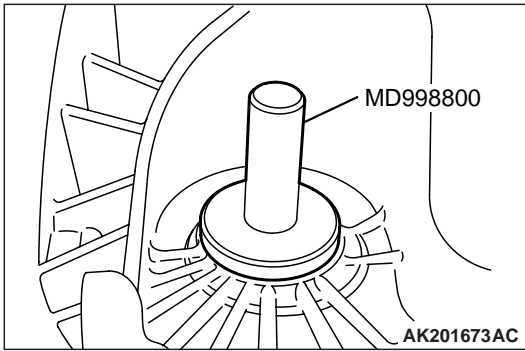
**>>B<< NEEDLE BEARING INSTALLATION**

1. Check the installation direction of the needle bearing.
2. Press fit the needle bearing until it is flush with the case.

**>>C<< OIL SEAL INSTALLATION**

1. Apply gear oil (Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4).



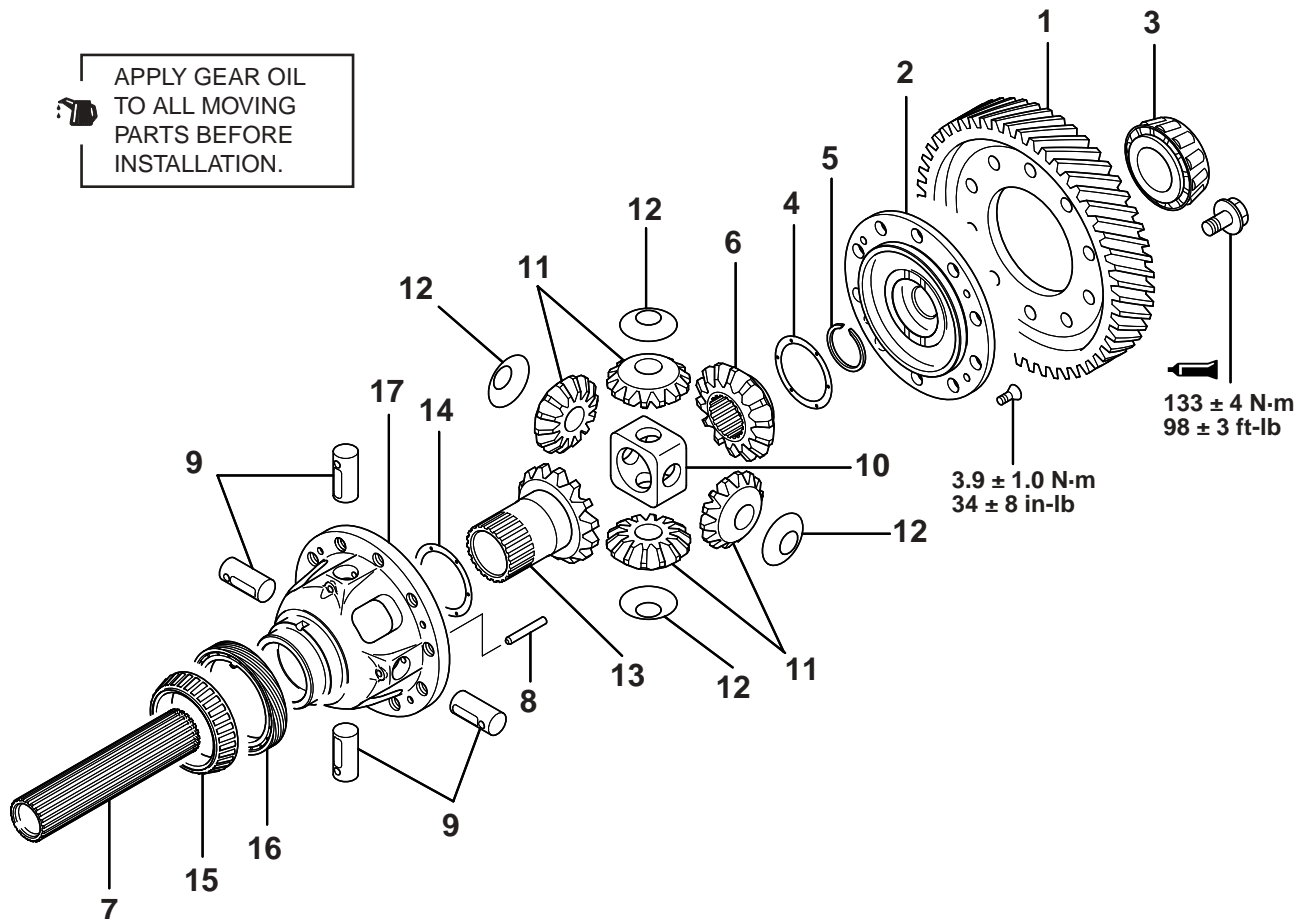


2. Using special tool MD998800, press fit the oil seal into the transaxle case.

CENTER DIFFERENTIAL

DISASSEMBLY AND ASSEMBLY

M1222002800039



AK203701AC

DISASSEMBLY STEPS

- >>D<< 1. CENTER DIFFERENTIAL DRIVE GEAR
- >>C<< 2. CENTER DIFFERENTIAL FLANGE
- <<A>> >>B<< 3. TAPER ROLLER BEARING

DISASSEMBLY STEPS

- >>C<< 4. SPACER
- >>C<< 5. SNAP RING
- >>C<< 6. SIDE GEAR
- >>C<< 7. FRONT OUTPUT SHAFT

DISASSEMBLY STEPS

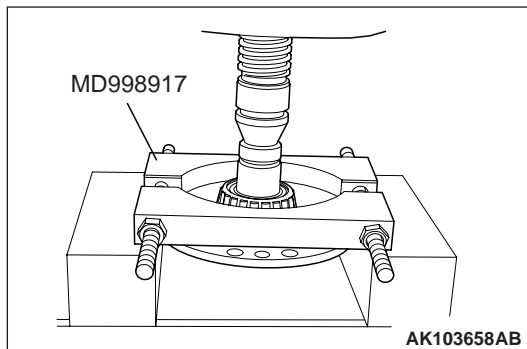
- >>C<< 8. LOCK PIN
>>C<< 9. PINION SHAFT
>>C<< 10. PINION SHAFT HOLDER
>>C<< 11. PINIONS
>>C<< 12. WASHERS
>>C<< 13. SIDE GEAR
>>C<< 14. SPACER
<> >>A<< 15. TAPER ROLLER BEARING
16. SPEED METER DRIVE GEAR
17. DIFFERENTIAL CASE

Required Special Tools:

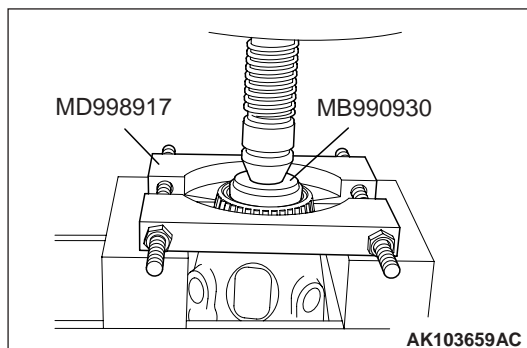
- MD998812: Installer Cap
- MD998917: Bearing Remover
- MB990930: Installer Adapter
- MD998824: Installer Adapter (50)
- MB990937: Installer Adapter

DISASSEMBLY SERVICE POINT**<<A>> TAPER ROLLER BEARING REMOVAL**

1. Support the taper roller bearing with special tool MD998917, and then set them on the press.
2. Push down on the differential case with the press to remove the bearing.

**<> TAPER ROLLER BEARING REMOVAL**

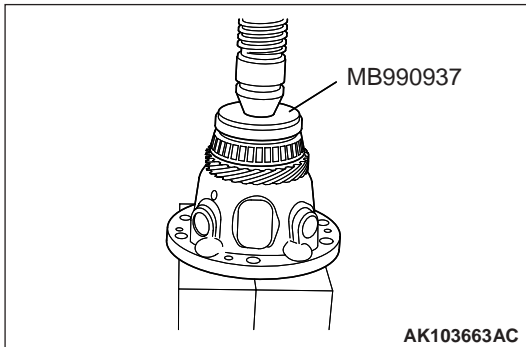
1. Support the taper roller bearing with special tools MD998917 and MB990930, and then set them on the press.
2. Push down on the differential case with the press to remove the bearing.



ASSEMBLY SERVICE POINTS

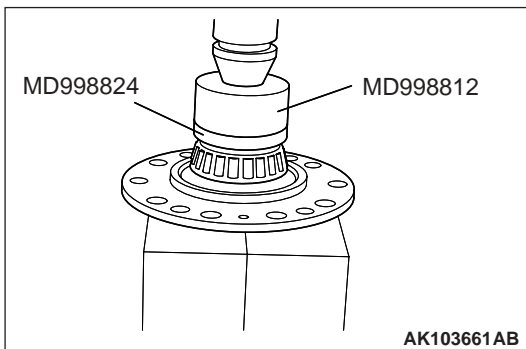
>>A<< TAPER ROLLER BEARING INSTALLATION

Using special tool MB990937, press install the taper roller bearing.



>>B<< TAPER ROLLER BEARING INSTALLATION

Using special tools MD998812 and MD998824, press install the taper roller bearing.



>>C<< SPACER, SIDE GEAR, WASHER, PINION AND PINION SHAFT, PINION SHAFT HOLDER, LOCK PIN, FRONT OUTPUT SHAFT, SNAP RING, CENTER DIFFERENTIAL FLANGE, INSTALLATION

1. Mount a spacer on the back surface of the side gear, and then install the side gear in the differential case.

NOTE: When a new side gear is to be installed, use a medium thickness spacer [0.93 to 1.00 mm (0.0366 to 0.0395 inch)].

2. Place the washers on the back of the pinions, and simultaneously mesh the four pieces with the side gears. Place them into position while rotating them. Then, install the pinion shaft holder.

3. Insert the pinion shaft.

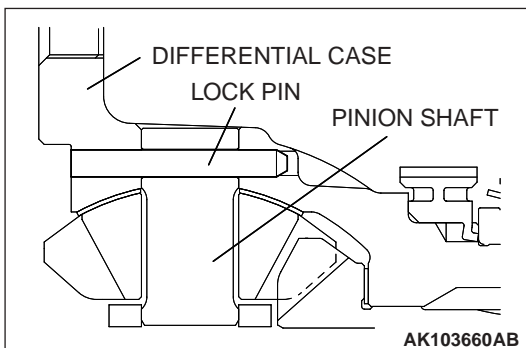
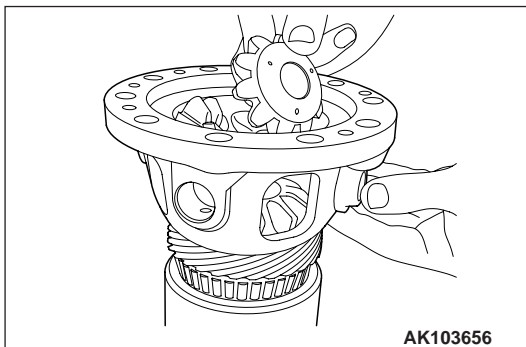
4. Install the lock pin so that it will be oriented in the direction shown.

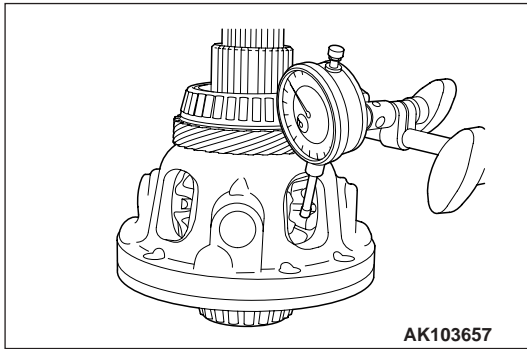
5. Install the front output shaft on the side gear, and install the snap ring.

6. Mount a spacer on the back surface of the side gear, and then install the side gear in the differential case.

NOTE: When a new side gear is to be installed, use a medium thickness spacer [0.93 to 1.00 mm (0.0366 to 0.0395 inch)].

7. Install the center differential flange by aligning the matching marks, and temporarily tighten the four machine screws.





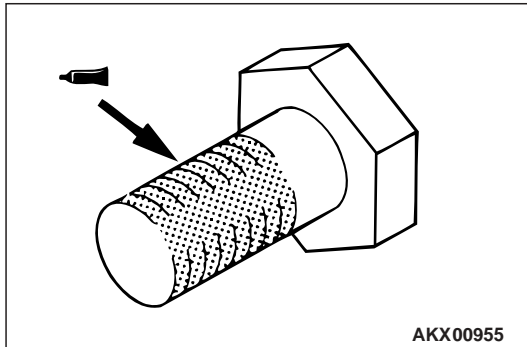
8. Measure the backlash between the side gear and pinion.

Standard value:

0.025 – 0.150 mm (0.0010 – 0.0059 inch)

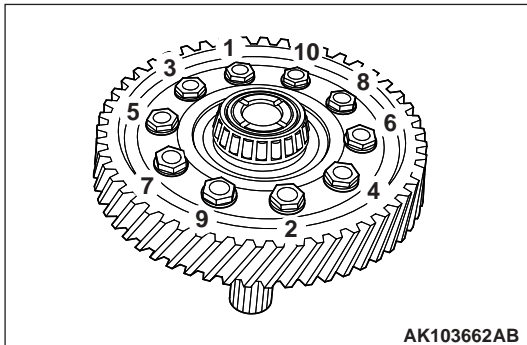
9. If the backlash is out of the standard value, select a spacer and re-measure the backlash.

NOTE: Adjust until the backlash on both sides are equal.



>>D<< DIFFERENTIAL DRIVE GEAR INSTALLATION

1. Apply sealant (3MTMAAD Part Number 8730 or 8731 or equivalent) to the entire threaded portion of the bolt.



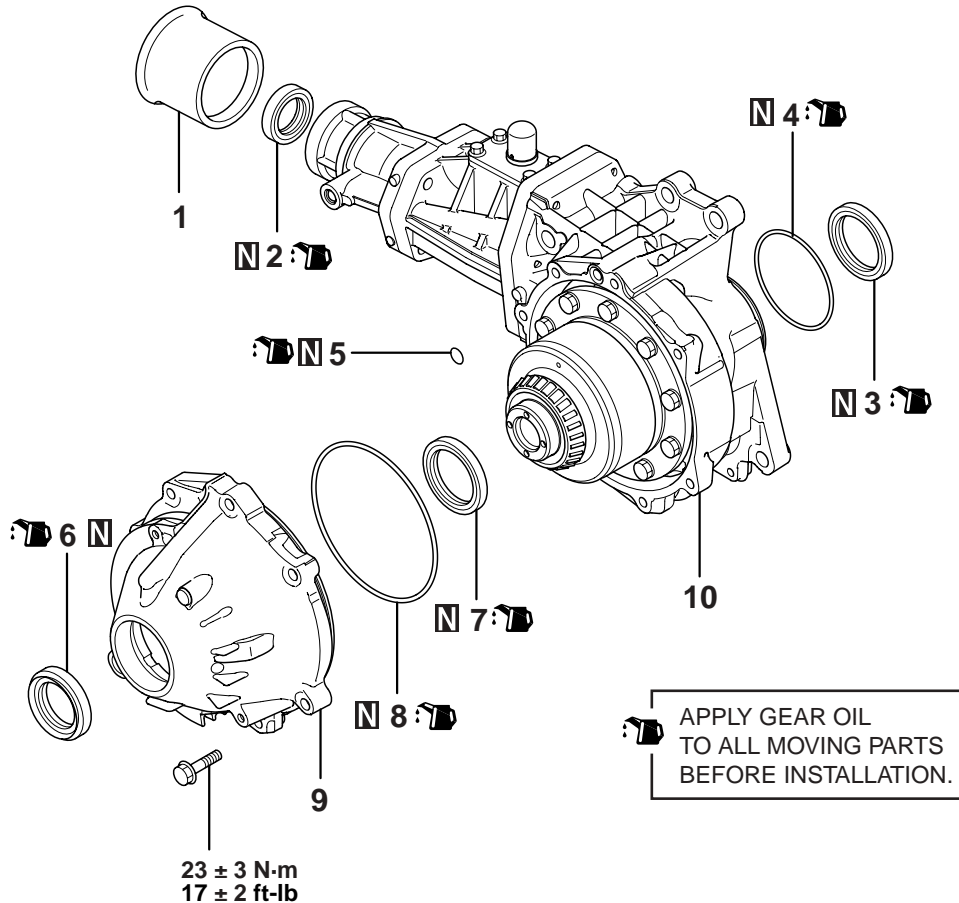
2. Tighten to the specified torque in the illustrated sequence.

Tightening torque: 133 ± 4 N·m (98 ± 3 ft-lb)

TRANSFER

DISASSEMBLY AND ASSEMBLY

M1222004000039



AK101413 AE

DISASSEMBLY STEPS

- >>E<< 1. DUST SEAL GUIDE
- >>D<< 2. OIL SEAL
- >>A<< 3. OIL SEAL
- >>A<< 4. O-RING
- >>A<< 5. O-RING

DISASSEMBLY STEPS

- >>C<< 6. OIL SEAL
- >>B<< 7. OIL SEAL
- >>A<< 8. O-RING
- 9. TRANSFER COVER
- 10. TRANSFER

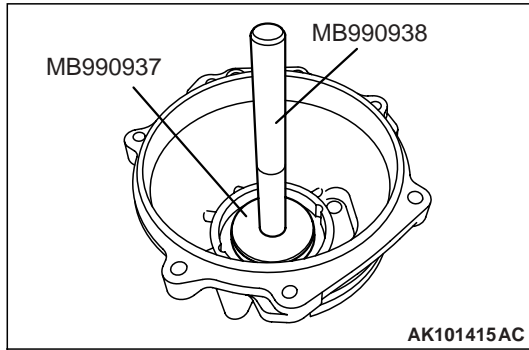
Required Special Tools:

- MD998800: Oil Seal Installer
- MB990938: Handle
- MB990937: Installer Adapter
- MB990887: Ring
- MB990891: Bushing Remover Installer Base
- MB990936: Installer Adapter

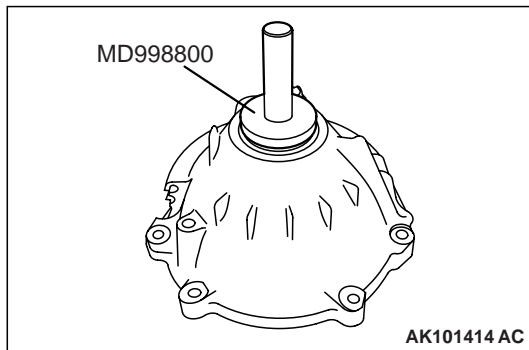
ASSEMBLY SERVICE POINT

>>A<< O-RING INSTALLATION

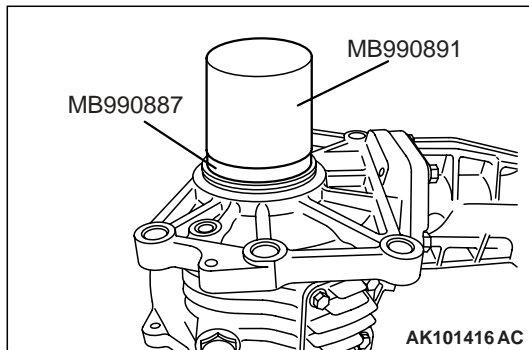
Install a O-ring to the transfer, and apply gear oil (Hypoid gear oil API classification GL-5 SAE 90) to the O-ring.

**>>B<< OIL SEAL INSTALLATION**

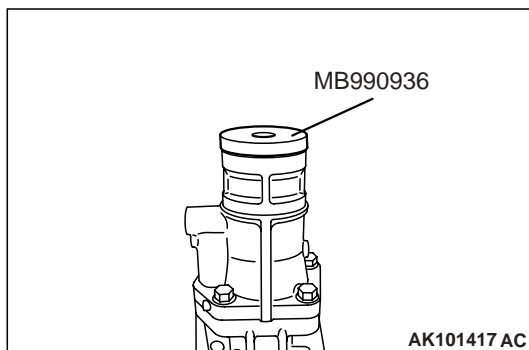
1. Apply gear oil (Hypoid gear oil API classification GL-5 SAE 90).
2. Using special tools MB990937 and MB990938, press fit the oil seal into the transfer cover.

**>>C<< OIL SEAL INSTALLATION**

1. Apply gear oil (Hypoid gear oil API classification GL-5 SAE 90).
2. Using special tool MD998800, press fit the oil seal into the transfer cover.

**>>D<< OIL SEAL INSTALLATION**

1. Apply gear oil (Hypoid gear oil API classification GL-5 SAE 90).
2. Using special tools MB990887 and MB990891, press fit the oil seal into the transfer.

**>>E<< OIL SEAL INSTALLATION**

1. Apply gear oil (Hypoid gear oil API classification GL-5 SAE 90).
2. Using special tool MB990936, press fit the oil seal into the transfer.

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

M1222012100086

TRANSAXLE

ITEMS	SPECIFICATIONS
Under cover mounting bolt	6.9 ± 0.9 N·m (61 ± 7 in-lb)
Interlock plate bolt	30 ± 3 N·m (22 ± 2 ft-lb)
Clutch housing-transaxle case mounting bolt	44 ± 5 N·m (32 ± 3 ft-lb)
Clutch release bearing retainer mounting bolt	9.8 ± 2.0 N·m (86 ± 17 in-lb)
Control housing mounting bolt	18 ± 3 N·m (13 ± 2 ft-lb)
Shift cable bracket mounting bolt	18 ± 3 N·m (13 ± 2 ft-lb)
Speedometer gear mounting bolt	3.9 ± 1.0 N·m (34 ± 8 in-lb)
Stopper bracket mounting bolt	22.3 ± 0.3 N·m (16.1 ± 0.2 ft-lb)
Select lever mounting bolt	18 ± 3 N·m (13 ± 2 ft-lb)
Select lever mounting nut	12 ± 1 N·m (104 ± 9 in-lb)
Differential drive gear mounting bolt	133 ± 4 N·m (98 ± 3 ft-lb)
Backup light switch	32 ± 2 N·m (23 ± 1 ft-lb)
Poppet spring	32 ± 2 N·m (23 ± 1 ft-lb)
Reverse idler gear shaft mounting bolt	48 ± 5 N·m (35 ± 3 ft-lb)
Roll stopper bracket mounting bolt	70 ± 10 N·m (51 ± 7 ft-lb)

TRANSFER

ITEMS	SPECIFICATIONS
Transfer-clutch housing mounting bolt	69 ± 9 N·m (50 ± 6 ft-lb)
Transfer cover mounting bolt	23 ± 3 N·m (17 ± 2 ft-lb)

GENERAL SPECIFICATIONS

M1222000200105

ITEMS		SPECIFICATIONS
Model		W5M51-2-X5BB
Applicable engine		4G63
Type		5-speed transaxle floor shift
Gear ratio	1st	2.928
	2nd	1.950
	3rd	1.407
	4th	1.096
	5th	0.720
	Reverse	3.416
Final reduction ratio		4.529
Speedometer gear ratio (driven/drive)		28/36
Transfer gear ratio		0.3018

SERVICE SPECIFICATIONS

M1222000300083

ITEMS	STANDARD VALUE	MINIMUM LIMIT
Input shaft end play mm (in)	0.05 – 0.17 (0.0020 – 0.0067)	–
Input shaft front bearing end play mm (in)	0 – 0.12 (0 – 0.0047)	–
Input shaft rear bearing end play mm (in)	0 – 0.12 (0 – 0.0047)	–
Input shaft 5th speed gear end play mm (in)	0 – 0.09 (0 – 0.0035)	–
Output shaft preload mm (in)	0.13 – 0.18 (0.0051 – 0.0071)	–
Output shaft taper roller bearing end play mm (in)	0 – 0.09 (0 – 0.0035)	–
Output shaft 3rd speed gear end play mm (in)	0 – 0.09 (0 – 0.0035)	–
Center differential pinion backlash mm (in)	0.025 – 0.150 (0.0010 – 0.0059)	–
Center differential case preload mm (in)	0.05 – 0.11 (0.0020 – 0.0043)	–
Synchronizer ring back surface to gear clearance mm (in)	–	0.5 (0.020)

SEALANTS AND ADHESIVES

M1222000500087

ITEM	SPECIFIED SEALANT
Clutch housing-transaxle case mating surface	MITSUBISHI Genuine sealant part No. MD997740 or equivalent
Control housing-transaxle case mating surface	
Under cover-transaxle case mating surface	
Air breather	3M™ AAD Part No.8001 or equivalent
Center differential drive gear bolt	3M™ AAD Part No.8730 or 8731 or equivalent

LUBRICANTS

M1222000400057

TRANSAXLE

ITEMS	SPECIFIED SEALANTS
Speedometer gear O-ring	Hypoid gear oil SAE 75W-90 or 75W-85W conforming to API classification GL-4
Control shaft oil seal lip gear oil	
Input shaft oil seal lip gear oil	
Driveshaft oil seal lip gear oil	
Each O-ring	
Select lever shoe	MITSUBISHI genuine grease part No.0101011 or equivalent

TRANSFER

ITEMS	SPECIFIED SEALANTS
Each O-ring	Hypoid gear oil API classification GL-5 SAE 90
Each oil seal	

SNAP RINGS, SPACERS AND THRUST PLATE FOR ADJUSTMENT

M1222012000108

Spacer

(For adjustment of input shaft end play)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	THICKNESS mm (in)	IDENTIFICATION SYMBOL
1.34 (0.0528)	34	1.61 (0.0634)	61
1.43 (0.0563)	43	1.70 (0.0669)	70
1.52 (0.0598)	52	1.79 (0.0705)	79

Snap ring

(For adjustment of input shaft front bearing end play)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	THICKNESS mm (in)	IDENTIFICATION SYMBOL
1.43 (0.0563)	Green (2)	1.59 (0.0626)	Yellow (2)
1.51 (0.0594)	White (2)		

Snap ring

(For adjustment of input shaft rear bearing end play)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	THICKNESS mm (in)	IDENTIFICATION SYMBOL
1.44 (0.0567)	None	1.58 (0.0622)	Brown
1.51 (0.0594)	Blue		

Thrust plate

(For adjustment of input shaft 5th speed gear end play)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	THICKNESS mm (in)	IDENTIFICATION SYMBOL
3.82 (0.1504)	0	3.98 (0.1567)	6
3.86 (0.1520)	2	4.02 (0.1583)	7
3.90 (0.1535)	3	4.06 (0.1598)	8
3.94 (0.1551)	5	4.10 (0.1614)	9

Spacer

(For adjustment of output shaft preload)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	THICKNESS mm (in)	IDENTIFICATION SYMBOL
0.86 (0.0339)	86	1.19 (0.0469)	L
0.89 (0.0350)	89	1.22 (0.0480)	G
0.92 (0.0362)	92	1.25 (0.0492)	M
0.95 (0.0374)	95	1.28 (0.0504)	N
0.98 (0.0386)	98	1.31 (0.0516)	E
1.01 (0.0398)	01	1.34 (0.0528)	O
1.04 (0.0409)	04	1.37 (0.0539)	P
1.07 (0.0421)	07	1.40 (0.0551)	None
1.10 (0.0433)	J	1.43 (0.0563)	Q
1.13 (0.0445)	D	1.46 (0.0575)	R
1.16 (0.0457)	K		

Snap ring

(For adjustment of output shaft rear bearing end play)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	THICKNESS mm (in)	IDENTIFICATION SYMBOL
1.36 (0.0535)	Yellow	1.55 (0.0610)	White
1.40 (0.0551)	Green	1.58 (0.0622)	Brown
1.44 (0.0567)	None	1.63 (0.0642)	Orange
1.48 (0.0583)	Black	1.68 (0.0661)	Blue
1.51 (0.0594)	Blue		

Snap ring

(For adjustment of output shaft 3rd speed gear end play)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	THICKNESS mm (in)	IDENTIFICATION SYMBOL
2.81 (0.1106)	None	2.97 (0.1169)	Green
2.85 (0.1122)	Blue	3.01 (0.1185)	Black
2.89 (0.1138)	Brown	3.05 (0.1201)	White
2.93 (0.1154)	Yellow	3.09 (0.1217)	Orange

Spacer

(For adjustment of center differential case preload)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	THICKNESS mm (in)	IDENTIFICATION SYMBOL
0.74 (0.0292)	74	1.04 (0.0409)	04
0.77 (0.0303)	77	1.07 (0.0421)	07
0.80 (0.0315)	80	1.10 (0.0433)	J
0.83 (0.0327)	83	1.13 (0.0445)	D
0.86 (0.0339)	86	1.16 (0.0457)	K
0.89 (0.0350)	89	1.19 (0.0469)	L
0.92 (0.0362)	92	1.22 (0.0480)	G
0.95 (0.0374)	95	1.25 (0.0492)	M
0.98 (0.0386)	98	1.28 (0.0504)	N
1.01 (0.0398)	01	1.31 (0.0516)	E

Spacer

(For adjustment of center differential case backlash)

THICKNESS mm (in)	IDENTIFICATION SYMBOL	THICKNESS mm (in)	IDENTIFICATION SYMBOL
0.6 (0.0236)	—	0.9 (0.0354)	—
0.7 (0.0276)	—	1.0 (0.0394)	—
0.8 (0.0315)	—	1.1 (0.0433)	—